

Rulemaking OAR 736-024-0015
Public comments received
January 30, 2021 through February
11, 2021

MARSHALL Janelle * OPRD

From: wseditor@aol.com
Sent: Saturday, January 30, 2021 3:55 PM
To: PUBLICCOMMENT * OPRD
Subject: Pacific City auto access

I strongly disagree allowing any motorized vehicle access, except dory-launching rigs, to the Pacific City beach by Cape Kiwanda for the simple reason that it would be impossible to regulate the number of cars allowed. Before the pandemic shut down, there was a free-for-all to see how many cars and trucks would fit, obliterating most of the beach from the tide line to the bottom of the dune. Pacific City has become a tourist destination in recent years, and without traffic restrictions, traffic will only get worse, ruining the aesthetic quality that makes this area so beautiful. I believe there are plenty of visitors to support the local restaurants and lodging facilities now, and no reason to open the beach up to additional vehicles. The current plan to prohibit parking along Kiwanda Drive and on the beach at the Cape has allowed people to once more enjoy the ocean without it becoming another Coney Island. We are blessed with 360 miles of coastline in Oregon, let's not think that we must host everyone who wants to see the ocean.

Walt Amacher
Pacific City

MARSHALL Janelle * OPRD

From: Margaret L. Quan <mugsterquan@hotmail.com>
Sent: Saturday, January 30, 2021 9:06 PM
To: PUBLICCOMMENT * OPRD
Subject: Public Comment - Rebuttal to Remarks Made at Public Hearing Jan 28, 2021
Attachments: 10.2_effects_of_vehicles.pdf; Petch-2018-Motivations-and-behavior-of-off-road-drivers-on-sandy-beaches.pdf; srep24899.pdf

Dear OPRD,

I would like to submit rebuttals to the public comments made at the OPRD public hearing on Thu January 28, 2021:

- (1) Safety: a few people mentioned that the lack of accident data doesn't support the justification for closing access.
 - Do we want to wait for an accident or fatality to warrant closing down the beaches or do we want to eliminate that risk completely? I prefer the latter.
 - Limiting the area in which vehicles are allowed will make it safer and make it easier for OPRD and the Sheriff to provide needed services and support in a timely manner.
 - We know that the increase in visitors has resulted in accidents this summer. News about the drunk RV driver stunned the community. That stretch of Kiwanda Drive is 20 mph, yet he still managed to hit a pedestrian. Our emergency services are limited in the area, and a delayed medical response could mean a fatality. Why invite the risk? https://www.tillamookheadlightherald.com/news/felony-duii-hit-and-run-on-cape-kiwanda-drive/article_4bec3414-d05e-11ea-b632-df4aa60b7618.html
 - It's not a matter of "if" but "when" when you consider the accidents at other coastal areas that permit beach driving:

<https://www.cbsnews.com/news/beach-driving-dangers-injuries-deaths-sunbathers-florida-amelia-island/>

<https://www.orlandosentinel.com/news/os-xpm-1985-08-04-0320060247-story.html>

<https://www.stuff.co.nz/auckland/local-news/nor-west-news/72030543/muriwai-4wd-tragedy-reveals-dangerous-driving-on-beach>

In Volusia County in Florida, however, beachgoers should watch out for cars, which are still allowed to drive along the beach in some areas. At least 50 people have been hit by cars and injured and nine killed, including two four-year-old children in 2010. Source: <https://www.floridatrialattorneys.net/blog/responsibility-beach-driving-deaths/>

<https://www.orlandosentinel.com/news/volusia-county/os-boy-killed-new-smyrna-beach-20100719-story.html>

(2) Elderly or mobility challenged people need access to the beach: a few people wanted public access because of their elderly parents or they were physically limited.

- I agree that they should have access to enjoy the beach which is being provided by the areas designated in the new rulemaking. They should be able to apply for special permits at no cost with a doctor's note just like a handicap sticker. Portable restroom facilities can be installed for handicapped persons just like at concerts and other venues. That should address their concerns.

(3) Comments of this nature were made: Driving on the beach is an Oregon tradition, we should be able to drive on it:

- Again, there will be designated areas in which driving is still permitted, so you can still drive on it.
- Beach rules have not changed in Tillamook County since 1992. Currently, the only places in which you can drive on the beach are: Warrenton to Gearhart (about ten miles), PC/TDM, a small patch at Lincoln City, and just south of Florence, some drivable spots exist at the Oregon Dunes National Recreation Area.
- Heading down the north Oregon coast, you can NOT drive anywhere else in Clatsop County or northern Tillamook County, including Seaside, Cannon Beach, Arch Cape, Manzanita, Nehalem Bay, Rockaway Beach, Garibaldi, Bayocean, Cape Meares, Oceanside or Netarts. No other section of the central Oregon coast allows driving on beaches, including Gleneden Beach, Lincoln Beach, Depoe Bay, Newport, Waldport and Yachats – or the 20 miles of beaches between there and Florence.

Hmmm... is Tillamook County just slow in adopting what seems to be the prevailing trend?

(Source: https://www.beachconnection.net/news/drivebeach043014_1014.php)

- Over the last 30 years, the area has become more densely populated with more housing and more visitors. A few trails from Sitka Sedge lead to the beach. All of these factors have increased the pedestrian traffic on the beach and need to be taken into consideration when assessing the beach driving issue. The situation is NOT the same as in the past.

Finally, even though environmental aspects have not really been discussed or researched specifically in this area, attached are various articles and research papers from Australia on the impact of beach driving which might be helpful for OPRD and the Advisory Committee to review.

Thank you,



Effects of Vehicles on sand dunes

INTRODUCTION

There is clear and irrefutable evidence from New Zealand and overseas experience that the use of vehicles on beaches can cause adverse environmental and social effects. Agencies in New Zealand and around the world have implemented a variety of management strategies to control these effects on beaches, and draws implications for the use of vehicles on New Zealand's beaches.

Vehicles that typically frequent beaches and dunes include four-wheel-drives (4WDs), trail bikes and quad bikes. Collectively they are termed off-road-vehicles (ORVs) in this article.



POLICY GOALS

National and regional policy documents emphasise the importance of protecting the natural character of the New Zealand coast and avoiding or mitigating any adverse effects on the coastal environment. Public access to the coast is a matter of national importance that must be maintained. However, there are clear policy directives enabling access to be controlled if an activity's environmental effects are deemed to be adverse or if there are particular ecological, cultural, or health and safety reasons for doing so.

Often these policy goals form key components of council plans. Left unmanaged, the use of vehicles on beaches, frequently leads to community and council's aspirations for maintaining the beaches' natural character being unfulfilled.

Different types of vehicle use are likely to have different impacts on individual beaches. For example, the impacts from slow speed access along the foreshore for fishing purposes will differ from vehicles travelling at high speed in dune areas. In addition, different beaches will have different capacities to withstand the impacts of vehicles. Use that may be seen as acceptable at one place may not be appropriate at another.

VEHICLE USE

Vehicles are used on beaches for a wide variety of reasons. These include:

- boat launching;
- access for fishing and surfing areas;
- sightseeing;
- four wheel drive club activities;
- emergency services (including surf life saving);
- racing (formal and informal);
- events (e.g. thundercat racing, beach volley ball, etc);
- technical (e.g. beach profiling, bird monitoring, etc);
- management (e.g. beach nourishment); and
- commercial (e.g. filming advertisements or movies).



Many of these activities, although perhaps benign in isolation, contribute to a cumulative negative impact upon the coastal environment. These impacts can be directly on the beach systems (i.e. physical or biological) or between beach users (i.e. social conflict). An outline of the type of potential impacts of vehicles on beaches is provided.

Managing human effects on the complex and dynamic geomorphological and ecological processes that combine within the beach system is a challenge world-wide. Human impacts on beaches are related to the ways in which we access beaches, as well as the types of activities we undertake, and the duration and frequency of those activities. Whilst all activities undertaken on beaches could potentially have an impact on the natural beach systems, vehicles have a greater potential impact on beaches when compared to pedestrians due to:

- the weight of the vehicle;
 - the engine power transferred to the wheels;
 - speed;
 - potential range of vehicles;
 - noise generated; and
 - potential safety impact on other beach users
- (Lindberg and Crook, 1979).



Adverse effects of vehicles

NO DISPUTE!

A significant body of literature on the subject of vehicles on beaches has been generated from the United States over the last 30 years as well as impacts being recorded from many other places around the world. The literature consistently reveals negative effects of vehicles on the beach geomorphological and ecological systems (e.g. Sheridan, 1979).

The debate within the international literature focuses largely on how to manage vehicle use on beaches and/or the carrying capacity of particular sites. There appears to be no dissenting authors that suggest vehicles have no impact on natural beach systems. Popular literature and writings from vehicle use advocacy groups (e.g. four wheel drive clubs, tourism organisations, etc) also appear to discuss how to minimise the adverse effects rather than dispute that there are effects of vehicle use on beach systems (e.g. Queensland Parks and Wildlife Service, 2005).



IMPACTS OF VEHICLES ON BEACHES

There are three key impacts of vehicles on beaches:

- **Physical impacts** - direct effect of pressure from wheels driving on vegetation and dunes;
- **Impacts on biodiversity** - indirect effects related to loss of vegetation, changes in microclimate
- (localised atmospheric conditions such as wind speed and temperature) loss of and changes to biodiversity; and
- **Social and other impacts** - vehicle use that conflicts with non-motorised beach users.

1. Physical impacts

The direct impact of vehicles on beaches largely relates to compaction and displacement of sand and beach soils; localised stripping of vegetation; damage to fauna; and creation of access tracks over dunes, across the foreshore and through vegetation. This in turn can lead to 'blow-outs' or dune erosion.

Vegetation and soil

The stresses of turning wheels can crush plants, break underground rhizomes (roots), reduce root production and decrease the percentage cover of vegetation and its diversity (Stephenson, 1999).





Wilshire et al. (1978) assessed the impacts of off-road vehicles on vegetation and soil at seven representative sites in the San Francisco Bay area. They recorded the complete stripping of plant cover by the activities of both two and four-wheel vehicles.

Direct impacts on soil structure include:

- increased soil densities;
- reduction of soil moisture;
- greatly reduced infiltration;
- extension of the diurnal temperature range by as much as 12°C; and
- reduction of organic carbon by an average 33% in exposed soils.

These types of changes are significant for beaches and dunes because they change the conditions that allow vegetation to grow and regenerate.

Griggs and Walsh (1981) attribute loss of vegetation, severe erosion and increased sediment discharge to off-road-vehicle (ORV) activity. They also highlight the “well-documented” physical environmental impacts of increased usage of ORVs on public lands throughout the USA. These physical and chemical impacts indirectly reduce the land’s capability of restoring its’ vegetative cover. Both the loss of plant cover and the physical changes caused by vehicles promote erosion.

The physical impacts of vehicles on beaches are also recognised at the microclimate scale (localised atmospheric conditions). For example, McAtee and Drawe (1981) who investigated impacts along the Texas coast found that the microclimate was greatly modified by vehicular and pedestrian traffic. The primary effect of human activity on the microclimate was a reduction in vegetation cover and species diversity.



Vehicle use on beaches can lead to significant damage to foredune vegetation including crushing and breakage of spinifex runners.

McAtee and Drawe (1981) also describe specific changes that occur as the intensity of human activity

- increases on dunes including:
- increased average wind velocities near the ground surface;
- increased evaporation rates;
- increased atmospheric salinity near the ground surface;
- increases in wind-carried sand particles near the ground surface;
- increased soil salinity;
- increased soil pH;
- increases in average soil temperature and range;
- increase in soil density;
- decreased beach elevation;
- reduced vegetation cover; and
- changes to the soil structure.

Many of these changes lead to increased vulnerability of sand dunes to wind erosion. Changes in microclimate are therefore important particularly on dunes because once the vegetation is disrupted, the associated increases in wind velocity then enable a greater volume of sand to be transported from the dune. This creates dune 'blow-outs'. Once mobilized, dune blow-outs

can potentially inundate any habitat, property or infrastructure behind the dune and these are difficult to repair (Gadgil, 2006).

Increased erosion

The effect of increased wind speed and corresponding dune erosion by vehicles was recorded by Brodhead and Godfrey (1977) in an investigation of the rates of vegetation breakdown and natural recovery at Cape Cod National Seashore, Massachusetts. In the study, the effects of controlled impacts of vehicles on a variety of coastal habitats were measured in terms of above and below ground biomass. Dune sites, ranging from unstabilised to moderately stabilised, were driven on at varying levels of intensity and along different exposures relative to slope and prevailing wind direction. They concluded that a single summer season of driving, comprising 300–700 passes of vehicles on a confined track through dense stands of dune vegetation, completely destroyed the above-ground portions but left enough underground roots for a small amount of vegetative re-growth after vehicle use was ceased. The removal of the vegetation resulted in increased wind speeds at ground level with a corresponding increase in dune deflation rates (the rate in which sand is transported away).



Anders and Leatherman (1987a) examined the effects of ORVs on the dune system of Fire Island National Seashore, New York during a detailed, two year field study. Monitoring of foredune vegetation showed a significant loss of vegetation resulting from ORV impacts. Loss of vegetation resulted in an alteration of the natural foredune profile, which could increase dune erosion during storm wave attack. The same authors also suggested that ORV use could contribute to the overall erosion rate by delivering large quantities of sand to the swash zone where it can be reached by the sea (Anders and Leatherman, 1987b).

Creation of tracks

Vehicle tracks are evident on many dune systems throughout New Zealand. As erosion takes place creating open areas, studies show that vehicle users see these areas as legitimate tracks because they are largely un-vegetated and therefore utilise them, causing further damage. Lindberg and Crook (1979) report that once the initial damage to dune vegetation has been done. Other ORV users feel that a "legitimate trail" is available for use. In a review by Priskin (2004) of a 33-year study on the use and impacts of ORVs for recreation and commercial eco-tourism in the Central Coast Region of Western Australia, increased significantly. For example, the number of vehicle access points increased from 412 to 908 over a 271 km stretch of coastline as well as an increase in the total length of vehicle tracks. He concluded that vehicles caused extensive and significant impacts on the soil and vegetation of dunes and foreshores.

2. Impacts on biodiversity

National and international examples

Luckenbach and Bury (1983) studied vehicle impacts in the Algodones Dunes, the largest dune complex in California and also the area that received the greatest use by ORVs. Studies of paired plots where ORVs were used or not, clearly demonstrated that ORV activities in the dunes significantly reduced the biota, both plant and animal. There were marked declines in herbaceous and perennial plants, arthropods, lizards and mammals in ORV-used areas compared with nearby controls. All sand-adapted species, including several plants considered rare or threatened species, were greatly reduced in habitats where ORVs operated. Importantly they described the biota as negatively affected even by relatively low levels of ORV activities with areas heavily used by ORVs having virtually no native plants or wildlife remaining.

Stephenson (1999) provides a comprehensive review of vehicle impacts on New Zealand beaches. He concluded that:

"Vehicle impacts on the biota of backshore sandy beaches and on the biota of coastal dunes have been demonstrated to be severe and these areas are considered to have a nil 'carrying capacity' with respect to vehicle use".

Adverse effects recorded within this review include loss and change of composition of vegetation, disturbance to wildlife, introduction of exotic animal and plant species, erosion, litter and increased exploitation of marine animals.





Invertebrates

There is a lack of research available into some classes of New Zealand invertebrates to make an informed assessment of the impact vehicles have on these organisms. These include worms species (ribbon worms/nemertean, round worms nematodes, polychaete) and some crustaceans (copepods, cumaceans, amphipods and isopods).

International research results show that the use of vehicles on beaches can reduce the abundance and number of species on and below the soil/sand surface. The impacts noted are:

- crushing of organisms (often many at once);
- destroying leaf litter and drift wood where organisms feed and live;
- changes to the soil properties and microclimate such as compaction; and
- the related reduction of plant cover.

Stephenson (1999) extrapolates that many crustaceans, insect and spider species (such as the katipo) would be crushed if run over by a vehicle. Insect species are also vulnerable if their food and shelter (for example drift wood, seaweed in the tide line) is pulverised or moved. However, research indicates that there are some species which may be more resilient to vehicle damage, depending upon their position in the beach system and their habits.



Gastropods (molluscs)

A study of vehicles on beaches in South Africa show that some species of Gastropod living on the foreshore were able to survive being driven on by vehicles if they are buried (the normal situation when the tide is out) and the sand is relatively compacted (Stephenson, 1999). One study shows that individual *Bullia rhodostoma* were robust enough to withstand being run over by vehicles even when placed on the surface. However individuals of the other three species being studied (*Donax serra*, *D. sordidus* and *Gastrosaccus psammodytes*) were easily crushed in this situation. Little research has been undertaken in New Zealand with regard to the impact vehicles have on Gastropod species. However, Stephenson (1999) suggests that species of similar size and robustness to *Bullia*, living in similar locations and that are buried when the tide is out, may not be at risk from vehicle use in areas of the beach they inhabit (for example *Amalda australis*, *Cominella adspersa* and *C. glandiformis*).

Bivalves

Important New Zealand bivalves are tuatua (*Paphies subtriangulata* and *P. donacina*), toheroa (*P. ventricosa*) and pipi (*P. australis*). These species are important for biodiversity and because they are mahinga kai (local food) species. Tuatua and toheroa are found on exposed beaches and pipi in more sheltered sites. There is some evidence based on studies of *Donax sp.* in South Africa, (Stephenson 1999) that suggest larger tuatua and toheroa buried in compacted sands can withstand vehicle impact. However, juveniles, that are smaller with softer shells and are distributed across the beach in high densities where vehicles are most likely to drive, may be vulnerable. In conditions where the surface of the beach is semi liquefied after vehicle use, toheroa float to the surface. This can potentially make them vulnerable to predators, such as gulls (Stephenson, 1999).



Article No. 10.2 - Effects of vehicles

Birds

Bird families feeding on sandy beaches include gulls and terns (*Laridae* species), godwits and sandpipers (*Scolopacidae* species), oystercatchers (*Haematopodidae* species) and dotterels, and plovers (*Charadriidae* species). These birds are susceptible to damage from vehicles driving in feeding areas on the foreshore and in nesting areas. Vehicle use has been linked with decreases in bird productivity related to crushing of nests and eggs, collision and disturbance.

Jeffery (1987 in Stephenson, 1999) directly correlated a sudden decrease in fledged oystercatchers with increasingly frequent vehicle traffic. The number of nests also decreased. Western (2003) describes two main impacts of vehicles on the Australian Hooded Plover a rare ground-nesting shorebird that has a similar habitat to the New Zealand dotterel. Nests and young birds were crushed and vehicles collided with flying birds. Buick and Paton (1989) estimated 81% of Hooded Plover nests were crushed by vehicles within the normal incubation period.

In New Zealand, birds which feed and nest in the backshore or dunes include the variable oystercatcher (*Haematopus unicolor*), New Zealand dotterel (*Charadrius obscurus*), banded dotterel (*Charadrius bicinctus*) and the Caspian tern (*Sterna caspia*). These species all have inconspicuous nests and highly camouflaged eggs, making them vulnerable to being run over by vehicles. Predation of eggs (for example by mustelids - stoats, weasels and ferrets) is a major factor in nesting failure in some areas. However, the impact of vehicles running over nests and eggs, and disturbing birds during breeding season is likely to contribute to the overall nest failure rate.

Anecdotal evidence suggests that high levels of mortality may occur for species such as dotterel and fairy tern without direct management controls. However, if controls are implemented these biodiversity losses can begin to be addressed. For example, in South Africa, Cherry (2005) identified a clear correlation between an increase in local oystercatcher populations as a consequence of a ban imposed several years earlier on four-wheeldrive vehicles on beaches.



New Zealand Dotterel eggs are around 3 cm long and look like small rocks. They are difficult to see and avoid.

(Photo: Coastline Consultants)

New Zealand Dotterels especially vulnerable to vehicles. They lay their eggs directly on the sand.

(Photo: Coastline Consultants)



Endangered fairy terns on Pakiri Beach need protection.

Photo courtesy A. Hogan



Fragmentation and weed spread

Jalava (2004) describes two other types of potential impact on biodiversity. Firstly, habitat fragmentation from vehicle-induced dune breaches and blow-outs resulting in disruption of vegetation and accelerated sea or wind erosion. Previously contiguous areas of beach/dune habitat can be converted into isolated patches of vegetation. This in turn can lead to an increased ecological vulnerability – particularly for regionally indigenous species. One example of this is the concern for the *Pimela* and *Sebaea ovata* in the dunes of the Manawatu area (Ogle, 2002). Secondly, Jalava (2004) highlights the potential for vehicles to act as vectors that spread alien or invasive pest plant species. This can occur by the physical transportation of seeds or plant material into new areas or by disrupting the existing indigenous vegetation cover to such an extent that new or invasive species can become established where they previously may not have survived.

Weed species in dune areas are having a negative effect throughout New Zealand. Once established, many weed species can be costly to control and difficult to eradicate.

3. Social and other impacts

Conflicts with other users

The New Zealand public has a long history of access to and use of the beaches and foreshore. This access has been multi-purpose, e.g. collection of kai moana; travel along the coast; boat launching; fishing and other recreational pursuits. New Zealanders highly value and believe they have a right to visit the foreshore (Booth and Doody 2004). Quite simply, everyone goes to the beach!

Conflicts between vehicle users on beaches and pedestrians are major issues for managing beach access. These include:

- vehicles driving between pedestrians;
- vehicles crossing over dunes into pedestrian areas;
- dangerous driving;
- noise even in relatively remote coastal areas; and
- loss of overall beach experience.

The use of vehicles often conflicts with non-motorised activities on beaches (Oregon Parks and Recreation Department, 2004). For example, the noise of an ORVs engine expands the real and perceived impact beyond the range of its physical presence (Lindberg and Crook, 1979). This has occurred at Karioitahi beach west of Auckland where increased vehicle use has significantly compromised the experience of other beach users and at times raised serious safety concerns (Greg Lowe, formerly Franklin District Council, pers. comm).

Changes in vehicle availability and recreational patterns

Motorised vehicle use on beaches has occurred since the 1920s. Historically, vehicle use on beaches was largely functional often providing access to farms and fishing spots. On some beaches there is a history of motor racing such as Muriwai beach on the west coast near Auckland. However, there were very few incidents of widespread concern associated with vehicle use until the popularity of four-wheeldrives escalated and vehicle numbers increased to a level where they began to impact on the beach environment and other beach users.

Modern vehicles are much faster, more capable of off-road travel, and more accessible to a wider group of society than in the past. The New Zealand Four Wheel Drive Association carried out a user survey in 2008 of their members. The results showed that 96% of respondents go to and/or drive on beaches.



In addition, there are now a wider range of recreation pursuits undertaken on beaches that conflict with motor vehicle use such as kite surfing and paragliding and beach volleyball.



Article No. 10.2 - Effects of vehicles

Increased population pressure

The effect of changes in technology and population increases results in more people visiting and using beaches. The number of reported conflicts as a result of these changes has increased accordingly. For example, over the past five years, the use of vehicles on beaches has received national media attention with particular regard to motor accidents, safety issues and user conflicts.

From 2000-2008, the New Zealand Herald published around 40 individual articles related to the issue of vehicles on beaches. In 2008, a New Zealand Herald poll found that of over 3600 people who responded to a survey, 49% wanted a total ban of vehicles on beaches and 42% sought restrictions.

We can assume that the country's population will continue to increase. This has the potential to increase both the recreational pressure and user conflicts on our beaches.



Legitimate vehicle access

It is important to acknowledge that on many New Zealand beaches it remains vital that vehicles can use the beach. Surf lifesaving, boat launching and the use of emergency vehicles will need to be accounted for in future management strategies.

Increased fire risk

The presence of vehicles on beaches and dunes during dry periods increases the risk of fire (Ternyik, 1979). This problem is also difficult to manage along the beaches of Waiuku west of Auckland (Greg Lowe, pers. comm.) and in the Manawatu region (Dave Harrison, Horizons Regional Council, pers.

Infrastructure

The impacts associated with the construction of infrastructure to support vehicle use on beaches can impact on the environment with potential loss of natural character. Removal or modification of back dune areas for the construction of car parking or access points can be substantial. The capital costs of such infrastructure on dunes can be costly and will inevitably require ongoing maintenance.





Climate Change

Predicted effects of climate change including sea level rise and increased frequency and severity of storms will result in greater coastal erosion and flooding (Dahm et al. 2005). Managing the pressures of increasing human use including the use of vehicles on beaches will be a priority in protecting communities from coastal hazards, including climate change.

Involving coastal communities and vehicle users in the management and restoration of natural dunes has the potential to assist in the development of more resilient coastal communities better able to understand and to live sustainably with natural coastal processes, and to adapt to future change (Dahm et al., 2005).

REFERENCES

- Anders, F.J.; Leatherman, S.P. 1987a: Effects of off-road vehicles on coastal foredunes at Fire Island, New York, *Environmental Management* 11, (1): 45-52.
- Anders, F.J.; Leatherman, S. P. 1987b: Disturbance of beach sediment by off-road vehicles. *Environmental Geology* 9, (3): 183-189.
- Brodhead, J.M.; Godfrey P. J. 1977: Off road vehicle impact in Cape Cod national seashore: Disruption and recovery of dune vegetation. National Park Service Cooperative Research Unit and Department of Botany, University of Mass., Amherst, Massachusetts, USA.
- Buick, A.M.; Paton, D.C. 1989: Impact of off-road vehicles on the nesting success of hooded plovers *Charadrius rubricollis* in the Coorong Region of South Australia. *Emu* 89:159-172.
- Cherry, M. 2005: South Africa - Serious about biodiversity science. *PLoS Biol* 3(5):e145.
- Dahm, J.; Jenks, G.; Bergin, D. 2005: *Community-based dune management for the mitigation of coastal hazards and climate change effects: a guide for local authorities*. Report prepared the Climate Change Office, Ministry for the Environment, 36p.
- Gadgil, R.L. 2006: Marram grass – friend or foe? A review of the use of *Ammophila arenaria* on New Zealand sand dunes. *Coastal Dune Vegetation Network Technical Bulletin No.5*. New Zealand Forest Research Institute Ltd. 32p.
- Griggs, G.B.; Walsh, B.L. 1981: The impact, control, and mitigation of off-road vehicle activity in Hungry Valley, California. *Environmental Geology* 3, (4): 229-243.
- Jalava, J.V. 2004: Pitcher's thistle - *Lake Huron dune grasslands recovery strategy*. Pitcher's thistle - Lake Huron Dune Grasslands Recovery Team. Parks Canada and Ontario Ministry of Natural Resources. 32p.
- Lindberg, C.A.; Crook, C.S. 1979: *Oregon's Coastal beaches and dunes: Impacts, uses and management considerations*. Oregon Coastal Zone Management Association, Newport, Oregon.
- Luckenbach, R. A.; Bury, R.B. 1983: Effects of off-road vehicles on the biota of the Algodones dunes, Imperial County, California. *The Journal of Applied Ecology*, 20, (1): 265-286.
- McAtee, J.W.; Drawe, D.L. 1981: Human impact on beach and foredune microclimate on North Padre Island, Texas. *Environmental Management* 5, (2): 121-134.
- Ogle, C.C. 2002: Weeds and indigenous biodiversity of the Manawatu-Wanganui sand country. *Proceedings of the Coastal Dune Vegetation Network Annual Conference*, Palmerston North. 65-77.
- Oregon Parks and Recreation Department, 2004: *Draft ocean shore management plan*. Oregon Parks and Recreation Department Planning Section. Salem, Oregon.
- Priskin, J. 2004: Four-wheel drive vehicle impacts in the Central Coast Region of Western Australia. *Environmental impacts of ecotourism*.
- Queensland Parks and Wildlife Service, 2005: *Drive safely*, Information Brochure Queensland Government Environmental Protection Agency, BP1609.
- Sheridan, D. 1979: Off road vehicles on public land. *Council of Environmental Quality*. US Government Printing Office: O-283-269.
- Stephenson, G. 1999: Vehicle impacts on the biota of sandy beaches and coastal dunes - A review from a New Zealand perspective. *Science for Conservation* 121. Department of Conservation, Wellington.
- Ternyik, W. 1979: Dune stabilization and restoration: methods and criteria. In *beaches and dunes handbook for the Oregon Coast*. Fitzpatrick, (ed). Oregon Coastal zone Management Association. Newport, Oregon.
- Weston, M.A. 2003: Managing the hooded plover in Victoria: A review of existing information. *Parks Victoria Technical Series No. 4*. Parks Victoria, Melbourne.
- Wilshire, H.G.; Nakata J. K.; Shipley S.; Prestegard K. 1978: Impacts of vehicles on natural terrain at seven sites in the San Francisco Bay area. *Journal of Environmental Geology* 2, (5): 295-319.



Author: Harley Spence, Coastline Consultants Ltd



Dunes Restoration Trust of New Zealand
Email: info@dunestrust.org.nz
www.dunestrust.org.nz

2014

ISSN 2230-6919



The Ministry for the Environment does not necessarily endorse or support the content of this publication in any way.



Motivations and behavior of off-road drivers on sandy beaches

N. Petch^{a,b}, G.S. Maguire^c, T.A. Schlacher^d, M.A. Weston^{a,b,*}

^a Deakin University, Geelong, Australia

^b Centre for Integrative Ecology, Faculty of Science, Engineering and the Built Environment, School of Life and Environmental Sciences, Deakin University, 221 Burwood Hwy, Victoria, 3125, Australia

^c BirdLife Australia, Suite 2-05, the Green Building, 60 Leicester Street, Carlton, Victoria, 3053, Australia

^d The ANIMAL Research Centre: Health + Ecology + Conservation, Faculty of Science, Health & Education, University of the Sunshine Coast, Maroochydore, QLD, 4558, Australia

ARTICLE INFO

Keywords:

GPS
Off-road vehicles (ORV)
Recreation
Ocean beaches
Zoning

ABSTRACT

Off-road vehicles (ORVs) on sandy beaches are highly controversial; they cause ecological harm, but at the same time are popular recreational tools. This juxtaposition constitutes a wicked problem in coastal management. Advancing solutions to this problem will require information on what motivates beach driving and what form it takes. To this end, we tracked off-road vehicles and explored the range of motives and purposes of drivers in the south-eastern part of South Australia. Four user groups were evident based on self-reported beach activities: General Recreation (REC), Fishing (FISH), Water-based Recreation (WATER) and Off-road Driving (ORD). Overall, drivers emphasized motivations related to experiencing quiet and remote coastal landscapes, with less emphasis on experiencing wildlife or the capacity to carry equipment or pets. Levels of ‘escapism and exploration’ were higher for ORD, moderate and similar for REC and FISH, and lowest for WATER. Levels of ‘experience and opportunity’ differed between all user groups, being highest for ORD, FISH, REC then WATER. ORD were more likely to make one-way beach trips. There was no difference in track length (km) amongst user groups (means, 3.45–5.21 km). However, the speed of ORD (including stops) was almost double that of other recreational groups (highest speed recorded, 140 kph), and these drivers are estimated to cause wildlife disturbance on 70% of the area of the beaches on which they drove. Those visiting the beach with the express purpose of driving are therefore predicted to cause the most widespread ecological disturbance. The motivations that primarily relate to psychological well-being (i.e. escape) and adventure (i.e. exploration) compared with much less importance being placed on habitats and wildlife poses significant challenges to conservation of beach ecosystems subjected to vehicle traffic. Further research could identify sections of beaches less attractive to drivers and yet important for wildlife, thereby creating conservation areas that could be protected at lower socioeconomic costs whilst providing some refuge for beach-dwelling wildlife.

1. Introduction

Beach recreation includes a wide variety of leisure pursuits such as swimming, surfing, walking, fishing and driving of off-road vehicles (Maguire et al., 2011; Priskin, 2003a). The recreational use of off-road vehicles (ORVs) on sandy beaches is popular on many shores worldwide, but highly controversial due to the environmental harm it causes (e.g., Priskin, 2003a; Schlacher and Thompson, 2007; Vivian and Schlacher, 2015). Driving on ocean beaches may also facilitate a number of other leisure activities such as swimming, fishing, surfing and sight-seeing (Fisher, 1998). Vehicles on beaches allows drivers to carry more recreational equipment, access otherwise remote locations, and engage in unique driving experiences, thus it is considered a

‘tourism product’ in some places (Mbuteti, 2013).

Driving on beaches poses a number of substantial environmental threats. Vehicles on beaches destroy vegetation (Luckenbach and Bury, 1983) and cause considerable sediment movement and erosion (Ramsdale, 2010; Schlacher and Thompson, 2008). In terms of fauna, vehicles damage habitat (Schlacher and Morrison, 2008; Thompson and Schlacher, 2008) and collide with, and kill, marine fauna such as birds and their eggs and young (Schlacher et al., 2013a, b, c; Williams et al., 2004), turtles (Hosier, 1980), and invertebrates (Davies et al., 2016; Moss and McPhee, 2006; Schlacher et al., 2007a, b; Schlacher et al., 2008a, b; Walker and Schlacher, 2011). Vehicles also cause wildlife disturbance (the physiological and/or behavioral disruption of normal activities such as resting (roosting) and feeding (Schlacher et al., 2013a,

* Corresponding author. Deakin University, Geelong, Australia.
E-mail address: mweston@deakin.edu.au (M.A. Weston).

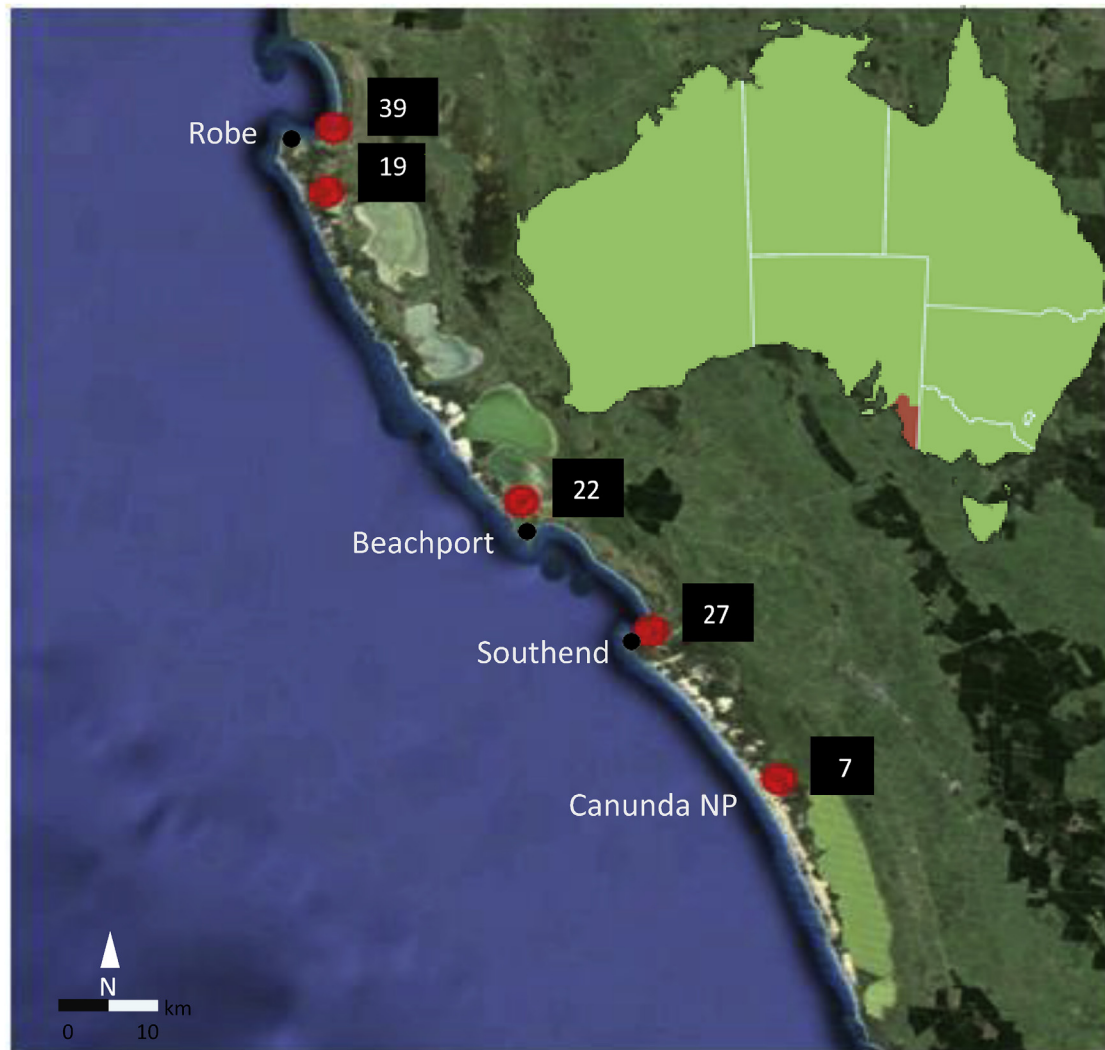


Fig. 1. Map of the Limestone Coast (red area on inset). Red spots indicate deployment sites and the number of loggers deployed at each site. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

b, c; Spaul and Heath, 2016; Weston et al., 2012b), both directly, and indirectly by transporting people and dogs (Meagher et al., 2012). Drivers on beaches rarely adhere to protocols that reduce their impacts, such as slowing down or steering away from wildlife (Weston et al., 2011).

The number of vehicles on beaches is rising and coastal managers face the challenge of managing vehicle access along coastlines (Priskin, 2003a; Klein et al., 2004; Schlacher et al., 2008a, b). Recreational impacts vary with intensity (frequency of use); driver behavior and consequent vehicle distribution patterns, and spatial distribution of vehicle-based or transported recreational users (Cole, 1994; Schlacher et al., 2008a, b; Sun and Walsh, 1998). Although beach drivers engage in different recreational activities, they are often considered as a homogeneous group (Taylor and Prideaux, 2008).

There is a growing concern that such broad classifications of recreationists may not reflect a more complex situation, such as heterogeneous objectives, motivations and behaviors, and that understanding possible impacts and solutions requires a more nuanced understanding of the recreationists involved (Wang et al., 2016). Arguably, the lack of knowledge regarding beach-driver objectives, motivations and behavior represents a critical information gap for those charged with managing beach environments (Sun and Walsh, 1998).

Information on what motivates individuals to undertake a particular leisure pursuit and what they seek during their activities can provide

useful guidance in developing management objectives and may possibly reduce conflicts amongst recreational user types (Graefe et al., 2000). For example, understanding the motivation of visitors to natural areas can identify specific landscape attributes desired by recreationists and this can underpin spatial zoning and guide infrastructure planning and access provision (Beh and Bruyere, 2007).

One of the primary goals of this study is to identify the motivations of drivers of Off-road Vehicles on ocean shores. In the case of driving on ocean shores, different driver objectives (purposes or goals) may suggest that subpopulations ('recreational units') of beach drivers exist. For example, Schlacher et al. (2013a, b, c) described vehicles on beaches with fishing rods versus those without, and from this inferred the drivers' likely purpose. This is akin to 'market segmentation' among tourists (e.g., Sánchez-Fernández et al., 2016).

Examining heterogeneity amongst drivers enables the identification of 'Management Significant Recreational Units' (MSRUs) i.e. groups of people who have similar objectives and thus are likely to require similar management responses; MSRUs may differ in terms of constituent motivations (McFarlane, 1994; Hvenegarrd, 2002). Therefore, herein we define MSRUs (henceforth, 'user groups') for beach drivers and examine variation in motivations among user groups.

Finally, we postulate that drivers within different MSRUs may behave differently (for example, see Weston et al., 2011), using beachscapes in different ways, thereby creating specific spatial patterns of use.

GPS tracking enables us to identify and measure such spatial patterns in recreational activities, but this approach remains largely in its infancy and not widely used in sandy beach research (Edwards and Griffin, 2013; Beeco et al., 2014). Here we examine the spatial use on beaches by drivers in different MSRUs using GPS tracking (see Westcott and Andrew, 2015, for a terrestrial approach to mapping ORV trails).

1.1. Aims

Here we classify drivers into user groups, identify their (possibly heterogeneous) motivations for driving on beaches, and explore their driving behavior. No other quantitative study that specifically addresses these issues is known to us in the peer-reviewed literature.

2. Methods

2.1. Study area

The study focused on ocean beaches along the Limestone Coast in southeast South Australia, between Canunda National Park (37.72°S, 140.28°E) and Robe (37.15°S, 139.75°E). The area contains over 400 km of exposed sandy beaches, separated by rocky headlands, and is renowned as a destination for ORV drivers. This coastline has two coastal towns popular as tourist destinations (Robe and Beachport) and several National and Conservation Parks. For example, Robe's population of just over 1000 residents attracts over 15,000 visitors per year (District Council of Robe, 2017). Although set back from the beach, many roads exist to enable people to travel along this coast, and access it at certain points, usually coastal towns (all coastal towns are accessible from formed roads).

2.2. Identifying driver objectives and motivations

Participants for interviews were recruited at five commonly-used beach access points (Fig. 1) from 2–27 January 2012 during daylight hours between 09:00–16:00 local time (AEDST). We placed a small sign near the beach entrance points and as drivers slowed/stopped we asked them to participate in the study. We also offered entry into a draw for vouchers (to an ORV specialty store) or a subscription to an ORV/outdoor magazine. We gave each participant a self-administered survey and a GPS logger (Appendix 1). The survey consisted of three main themes: a) beach use; b) vehicle and accessories; and, c) driver demographics.

To characterise the type of recreational activities, we asked drivers to describe the main activities that they undertook whilst visiting the beach (respondents could list as many reasons as they wished; Appendix 1). A K-Means cluster analysis (SPSS 21.10 Chicago, IL, USA) classified each driver according to the beach activities they reported, and defined four 'user groups' to which each driver was uniquely assigned.

Other questions focused on driver motivation drawing on push-pull theory (Uysal and Jurowski, 1994; Mohammad and Mohammad, 2010). Individuals are 'pushed' by their emotional needs and 'pulled' by the emotional benefits of leisure activities (Goossens, 2000). Push factors are intrinsic influences, such as escape, relaxation, adventure, and social interaction. Pull factors are those based on the destination such as accessibility to facilities and natural attributes (Uysal and Jurowski, 1994). Consisting of 19 push and 14 pull statements (adapted from Uysal and Jurowski, 1994; Taylor and Prideaux, 2008), participants indicated their level of agreement based on a continuous scale from 0 = "strongly disagree" to 100 = "strongly agree".

We used an investigator consensus approach to classify most items to three broad categories, for presentation purposes. Subsequently, a principal component analysis (PCA) was used to quantitatively identify themes/factors amongst responses and within respondents. The PCA, with varimax rotation, provided a model of the data describing

respondent motivations. Factors selected for interpretation and analysis were those with eigenvalue of ≥ 1.00 , contained two or more items with factor loadings ≥ 0.6 , and exhibited high reliability (Cronbach's $\alpha > 0.7$). A series of one-way analyses of variance (ANOVA) with Tukey *post-hoc* tests was used to test for differences among mean factor scores among recreational units defined by the cluster analysis.

2.3. Driver behavior (spatial use)

We fastened GPS loggers (I-gotU GT-120 GPS) with double-sided tape to vehicle dashboards; the loggers recorded locations at 5 s intervals. Participants were asked to retain the logger in the vehicle for the duration of the day, and return it in a reply-paid envelope (with a completed survey; see below). On occasions when vehicles were travelling in a group, we deployed one logger for the group.

Loggers were downloaded, inaccurate fixes removed, and data analysed in GIS (ArcMap 10.1, ESRI, 2010). The first step was to define spatial beach units. Boundaries of beaches within the study area were defined according to natural features (e.g., rocky headlands), and each was delineated by a polygon and labelled (25 beaches in total).

Vehicle tracks were then separated into individual 'beach trips'. A beach trip ($n = 334$) was defined as an instance of use of a particular beach, it was a beach track that involved entering a beach and exiting it through a designated path (e.g., a track through the dunes). Beach trips were classified as one-way or return. A one-way trip was defined as a vehicle entering and leaving the beach travelling in one direction. This included trips that deviated off and back onto the same beach, heading in the same direction (only the portion of track on the beach was used in analysis). A return trip was defined as a vehicle turning around and returning on the same beach. If a vehicle completely left the beach (e.g., visited another beach) and then returned, this was classified as a separate trip. For each beach trip, 11 variables were derived for analysis (Table 1 and S1). All but two of the variables were excluded because they were highly correlated, and we analysed two slightly correlated response variables (track length [km] and average speed [including stops; kph]) ($r = 0.279$, $n = 331$ trips).

Separate general linear mixed models (GLMMs) explored the difference between recreational units while incorporating random factors (logger ID and beach ID) to account for repeated beach-visits from 23.5% of drivers (GENSTAT 14, VSN International, UK). Data were transformed to meet requirements of normality. Chi-squared analysis was performed to determine whether a significant relationship existed between trip type (one-way versus return) and recreational units as defined by cluster analysis (see above).

3. Results

3.1. Response rates and demographics

Of the 174 participants, approximately half (55%) were from South Australia (the state managing the study beaches) and 43% were from Victoria (an adjacent state that prohibits driving on beaches). Overall, 66% of those approached ($n = 264$) agreed to participate. Of the 114 loggers distributed, 92 (80%) were returned, whilst the return rate for survey forms was slightly higher ($n = 97$; Table 2; Fig. 2). Most participants were male (76%), in full-time employment (70%; Table S2), and holiday-makers (88%). Most drivers were not part of an ORV club (78%) and had not undertaken a formal course in off-road driving (74%).

3.2. User groups

Cluster analysis was used to define four types of drivers. These 'user groups' were: 1) drivers who visited the beach for the sole purpose of driving an ORV (off-road driving group 'ORD'; $n = 45$); 2) drivers who used vehicles mostly to access the beach for water-based activities, such

Table 1

Variables derived from GPS loggers used to characterise space use of ORVs on South Australian beaches (see Table S1 for calculation of each variable). The top lines shows the number of loggers received from each user group ($n = 81$); and the number of individual beach trips attributed to user group ($n = 334$ of which 331 were analysable). The bottom section lists the eleven variables extrapolated from each beach trip. Weakly correlated variables* were used in analysis of space use between user groups are indicated by asterisks*.

Driver recreational group	General beach recreation		Fishing		Water-based recreation		Off-road driving	
Number (percentage) of loggers	7 (8.6%)		10 (12.4%)		24 (29.6%)		40 (49.4%)	
Number (percentage) of beach trips	17 (5.1%)		36 (10.8%)		40 (12.1%)		241 (72%)	
Variables (per beach trip)	mean \pm se		mean \pm se		mean \pm se		mean \pm se	
Number of beach trips per vehicle	2.43 \pm 1.02 (1.00–8.00)		3.7 \pm 0.67 (1.00–7.00)		1.67 \pm 0.44 (1.00–11.00)		6.18 \pm 0.84 (1.00–18.00)	
Length of beach used (km)	1.69 \pm 0.72 (0.003–10.69)		2.26 \pm 0.62 (0.01–14.51)		1.94 \pm 0.38 (0.11–10.66)		1.98 \pm 0.20 (0.038–14.34)	
Percentage of beach length used	39.81 \pm 8.57 (0.42–100)		46.80 \pm 6.15 (1.13–100)		25.99 \pm 4.00 (1.00–100)		69.12 \pm 1.93 (0.46–100)	
Track length (km)*	3.69 \pm 1.37 (0.13–21.62)		3.97 \pm 1.03 (0.09–27.05)		5.21 \pm 1.05 (0.09–26.33)		3.45 \pm 0.35 (0.04–36.05)	
Number of access points used	1.41 \pm 0.12 (1.00–2.00)		1.58 \pm 0.13 (1.00–4.00)		1.27 \pm 0.08 (1.00–2.00)		2.00 \pm 0.04 (1.00–6.00)	
Area of beach disturbed (wildlife) (sq km)	0.16 \pm 0.07 (0.01–1.14)		0.19 \pm 0.06 (0.004–1.36)		0.18 \pm 0.03 (0.005–0.97)		0.17 \pm 0.02 (0.002–1.52)	
Percentage of beach disturbed (wildlife)	42.57 \pm 8.86 (0.68–100)		48.85 \pm 5.89 (0.84–100)		23.40 \pm 4.31 (1.47–100)		70.04 \pm 1.87 (0.02–100)	
Average trip speed incl. stops (kph)*	12.86 \pm 3.08 (0.13–33.60)		14.39 \pm 3.13 (0.02–51.43)		12.06 \pm 2.30 (0.08–43.60)		22.56 \pm 1.04 (0.08–74.86)	
Average trip speed excl. stops (kph)	19.37 \pm 2.70 (2.01–38.64)		26.07 \pm 3.25 (0.02–65.87)		23.75 \pm 2.07 (2.04–68.18)		29.37 \pm 0.87 (2.04–74.86)	
Maximum speed (kph)	115.99		139.40		70.94		131.78	
Vehicle trip type	Return	One-way	Return	One-way	Return	One-way	Return	One-way
	58.8%	41.2%	55.6%	44.4%	77.5%	22.5%	12.2%	87.8%

as swimming and surfing (group 'WATER'; $n = 28$); 3) drivers who used vehicles mainly to access fishing spots along the beach (group 'FISH'; $n = 14$); and 4) drivers who undertook varied recreational activities, such as picnicking, playing games, and sunbathing (group 'REC'; $n = 10$).

3.3. Motivations for driving vehicles on beaches

Respondents rated 33 potential motivations (items; Fig. 3). The motivational item with the highest level of agreement was 'driving on beaches gives me an appreciation of the coastal landscape'. This was followed by 'driving on the beach gives me access to quieter areas', and 'beach driving allows me to experience different landscapes'. Generally, all items had more than 50% of agreement, except two: 'you have to be experienced to drive on beaches' and 'beach driving allows me to take my dog with me'.

To identify themes in motivations, a PCA, with varimax rotation, was conducted on the 33 motivational items. Three factors were selected to classify the main themes. These explained 53.2% of the variation in the data and had high reliability coefficients (Table 3).

The first and largest factor ('escapism and exploration') contained motivational items relating to freedom and adventure ('escaping routine life', 'exhilaration') and experiencing a sense of exploration ('different landscapes', 'exciting new places'). This factor was dominated by push statements (7 of 8 items). The second factor 'experience and opportunity' was characterized by pull statements pertaining to beach driving as a leisure activity and the accessibility it gives drivers to beaches ('I visit the area because I can drive on the beach', 'I would visit the beach less if I couldn't drive on the beach'). The third factor 'water-based opportunities' relates to the accessibility to other leisure activities that beach driving provides ('access to fishing spots', 'access to surfing spots') (Table 3).

We examined if different motivations, as defined by PCA (from the

33 motivational items), existed between the user groups as defined by Cluster Analysis (from the activities which drivers reported they undertook during their beach visits). To do this we conducted three ANOVAs, one for each factor, using the PCA factor scores as response variables. Significant differences existed among user groups within two of the factors: 'escapism and exploration' (ANOVA, $F_{3,93} = 5.579$, $p = 0.001$) and 'experience and opportunity' (ANOVA, $F_{3,93} = 7.427$, $p \leq 0.001$) (Fig. 4). Post-hoc Tukey tests revealed that ORD exhibited higher levels of 'escapism and exploration' than WATER ($p = 0.001$). ORD also exhibited higher levels of 'experience and opportunity' than WATER and GEN ($p \leq 0.001$).

3.4. Usage patterns of off-road vehicles on beaches (driver behavior)

Data from 331 beach trips for 11 variables derived to characterise the space use of vehicles on beaches are provided in Table 1. ORD accounted for most beach trips documented by loggers (72.0%), then WATER (12.1%), FISH (10.8%) and REC (5.8%). Example tracks are shown in Fig. 2.

Track length (0.09–36.05 km) did not differ among user groups (log transformed; GLMM, Wald $\chi^2 = 2.85$, $df = 3$, $n = 331$, $p = 0.416$). However, the speed of vehicles including stops was fastest for ORD (mean, 22.6 kph) than for other user groups (FISH, 14.4 kph; REC, 12.9 kph; WATER, 12.1 kph; double logged, GLMM, Wald $\chi^2 = 21.73$, $df = 3$, $n = 331$, $p < 0.001$; Table 1). The maximum speed reached on the beach was 139.4 kph (a fisher). The maximum speed recorded among other user groups exceeded 100 kph, apart from WATER (max., 70.9 kph).

There was a relationship between the frequency of trip type (one-way/return) and user group ($\chi^2 = 7.81$, $df = 3$, $p \leq 0.001$). ORDs engaged in a higher proportion of one-way trips (87.8%) compared with WATER (77.5%). REC and FISH exhibited a slight preference for return trips (58.8% and 55.6%, respectively).

Table 2

Participation and return rates of loggers and surveys (pooled across the five deployment sites) by driver State of primary residence.

Drivers state of primary residence	Approached	Declined	Deployed	Loggers returned	Surveys returned
	$n = 174$	$n = 60$	$n = 114$	$n = 92$	$n = 97$
Victoria	75 (43.10%)	19 (31.65%)	56 (49.12%)	43 (46.74%)	46 (47.42%)
South Australia	95 (54.60%)	40 (66.67%)	55 (48.25%)	48 (52.17%)	48 (49.48%)
New South Wales	1 (0.57%)	0	1 (0.88%)	1 (1.09%)	1 (1.03%)
Queensland	2 (1.15%)	1 (1.67%)	1 (0.88%)	0	1 (1.03%)
Western Australia	1 (0.57%)	0	1 (0.88%)	0	1 (1.03%)

a) General beach recreation



b) Fishing



c) Water-based recreation



d) Off-road driving



Fig. 2. Examples of typical trips undertaken by Off-road Driving user groups on beaches in south east South Australia: a) general beach recreation 'return trip', b) fishing 'return trip'; c) water-based recreation 'return trip' and d) off-road driving 'one-way trip'.

4. Discussion

This study describes a mostly male, non-club affiliated ORV beach driving population, motivated by escapism and a desire to derive unique experiences in coastal landscapes. We describe specific types of drivers, with different objectives, motivations, and behaviors on beaches. General recreationists (REC) and fishers (FISH) had moderate levels of *escape and exploration* and *experience and opportunity* as motivations, and return trips were common in these groups. Water-based recreationists (WATER) had the lowest levels of motivation to *escape and explore* and *experience and opportunity*, and had relatively high rates of return trips, which is unsurprising given they are using vehicles to access swimming or surfing locations. Those visiting the beach specifically to drive (ORD) are more highly motivated by desires to *escape and explore* and *experience and opportunity*, are more likely to conduct one-way trips, and travel at faster average speeds than other drivers. These drivers often followed a 'route' (a directional pathway

aimed at a specific destination) along the coast, from one beach to another ('beach-hopping') and from one coastal town to another. On the Limestone Coast, routes such as these are promoted for ORV experiences (SATC, 2005). These drivers visited a greater number of beaches and spent less time on any given beach compared with other user groups. Other drivers engaged in other leisure pursuits (such as swimming and surfing) drove their vehicle to a particular spot, parked on the beach, and usually returned along the same route.

4.1. Different impact profiles of different drivers

All drivers on beaches, regardless of user group, have the capacity to cause environmental harm (Schlachter et al., 2013c). In this section, we discuss the impact profiles of different driver behavior. Because differences in impacts attributed to distinct user groups will generally be proportional to vehicle numbers, the number of different drivers on the beach will also influence observed environmental impacts. Similarly,



Fig. 3. Level of agreement/importance of the motivational items, broadly classified into general type of motivator, defined by investigator consensus (formal categorisation involved Principle Components Analysis and resulted in a different framework; Table 3). Three items (12, 27, 32) were not readily classifiable under this framework, and are omitted from this figure. Item numbers are next to each motivator, and full wording of each item is in Table S3.

Table 3

Factors derived from principal component analysis. Each factor was labelled based on the common characteristics of the motivational items within each factor grouping. The numbered items correspond with the numbered items in Table S3. The rightmost column shows the results from a series of one-way ANOVAs examining the difference between factor scores across recreational groups.

Factor (item) No. push/pull statements	Summary	Cronbach's α (no. of items in scale)	Total variance explained	Difference between recreational groups?
Escapism and exploration (items 2, 3, 4, 6, 11, 13, 14, 16) 7 push/1 pull	Beach driving gives me access to quieter areas and allows me to experience unique and different landscapes I wouldn't normally encounter. It is exhilarating and adventures and allows me to escape routine life.	0.901 (8 items)	41.81%	$F_{(3,93)} = 5.579$, $p = 0.001$ R^2 0.840
Off-road driving experience and opportunity (items 9, 12, 19, 27, 31) 1 push/4 pull	I can visit beaches only accessible by ORV. I visit this area because I can drive on the beach. I would visit the coast less if I couldn't drive on the beach.	0.842 (5 items)	6.14%	$F_{(3,93)} = 7.427$, $p \leq 0.001$ R^2 0.798
Water-based opportunities (items 23, 30) 0 push/2 pull	Beach driving gives me access to better fishing and surfing spots.	0.740 (2 items)	5.23%	$F_{(3,93)} = 1.009$, $p = 0.392$ R^2 0.967

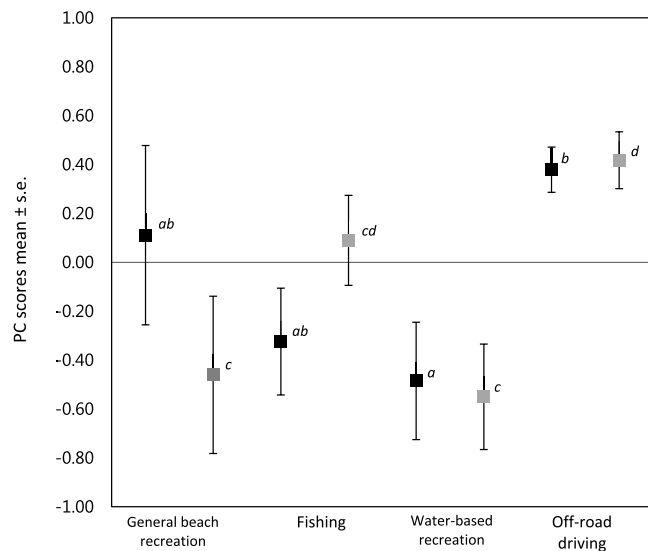


Fig. 4. Variation in driver motivations between user groups. Principal component scores (mean \pm s.e.), characterising driver motivations, are shown across user groups (for two factors which varied across user groups). Black squares represent the *escapism and exploration* factor (a, b) and grey squares represent the *experience and opportunity* factor (c, d), letters represent homogeneous subsets as revealed by post hoc tests for two one-way ANOVAs, one for each factor.

although data are currently unavailable, seasonality of beach use may vary among user groups, with some possibly (e.g., REC, WATER) being more numerous during the warmer months when many species of beach-associated birds breed, whilst others (e.g., ORD, FISH) might show less seasonality in beach visitation. Hence, it is plausible that environmental impacts to beaches caused by ORVs may vary seasonally, and this aspect warrants further investigation.

A vehicle doing a one-way beach trip can travel longer distances, access more remote places, and potentially encounter more wildlife including shorebird territories and roosting sites (Cole, 1994). From the perspective of environmental consequences to beach ecosystems, we have described a group of drivers whose behaviors may cause widespread impacts, and others who may contribute disproportionately to more localized, intensive impacts. A vehicle engaging in a return trip on the same beach may expose the beach habitat and biota to a higher number of tracks (assuming different wheel tracks are used between entry and return trajectories; Priskin, 2003a; Schlacher and Thompson, 2007). Schlacher and Morrison (2008) report 15% of the beach face was disturbed by vehicle ruts after 10 vehicle passes, and 85% after 100 passes. Whilst one-way trippers are dispersed across a greater distance, thereby creating fewer tracks, this does not mean that their environmental impacts are less severe. Wildlife species may respond behaviorally to vehicles, initiating escape behaviors and thus disrupting normal behavior patterns including breeding (Schlacher et al., 2013b); this disruption can occur with a single vehicle pass.

Invertebrates buried in the sand (some being food resources for beach birds) can be damaged by relatively few vehicles passing over them (Schlacher et al., 2007a, b; Schlacher et al., 2008a, b; Sheppard et al., 2009). We describe a situation where those drivers visiting the beach explicitly to drive will encounter (and likely disturb) a relatively higher number of wildlife at faster average speeds (thus, generally at relatively shorter latencies). While faster average speeds means shorter disruptions to normal wildlife activities (on average), it also likely increases the probability of collisions between vehicles and birds (Weston et al., 2014).

Drivers not visiting the beach specifically to drive will encounter fewer wildlife because they traverse less beach, but should they stop near a sensitive area (such as a nest), their lengthy stay could cause

substantial disruption, and even potentially exclude wildlife from using a portion of their habitat for lengthy periods. This ‘central place recreation’ is associated with people leaving their vehicle. At least at the local scale, intensive trampling by people is associated with reduced activity of infauna (Schlacher et al., 2016). Birds respond at greater distances to people on foot than in vehicles (McLeod et al., 2013), and the presence of fishers reduces the survival of nearby eggs of beach-nesting birds (Rees et al., 2015). Beach activities such as fishing and water-based activities often occur in the lower beach zone that is the preferred habitat for foraging and roosting (resting) shorebirds (Schlacher et al., 2013a). Incubating shorebirds in particular, are more highly disturbed by ‘static’ recreationists versus mobile recreationists (Weston et al., 2011).

The surf zones of beaches are important habitat for many fish species of both recreational and commercial importance (Borland et al., 2017; Olds et al., 2018). The use of off-road vehicles effectively allows fishers to expand their spatial footprint of harvesting fish from the surf zone of beaches. Parking on beaches also alters the behavior of other drivers who are commonly forced higher on the beach to avoid other parked vehicles or other recreationists, thereby exposing nests to increased crushing risks from vehicles (Maslo et al., 2016; Schlacher and Thompson, 2008).

Speed limits on beaches exist along the Limestone Coast; in National Parks, the speed limit is 40 kph (DEWNR, 2004). Where no limit exists, beaches are considered as roads and a speed limit of 100 kph applies (Mbuteti, 2013). A substantive fraction (14%) of drivers exceeded the maximum speed limit of 100 kph at some point during their journey. Excess speeds on beaches can increase the rate of collision with, and escape distances of wildlife (Fisher, 1998; Schlacher et al., 2014) and be a danger to other beach users including vehicle occupants (Fuller, 2017; Murray, 2017).

4.2. Motivations for beach driving

Both push and pull motives featured among beach drivers. The factor ‘*escapism and exploration*’ was dominated by push factors relating to freedom and adventure, and experiencing a sense of exploration. ‘*Experience and opportunity*’ was characterized by pull factors relating to driving on the beach as a leisure activity and the accessibility it gives drivers. Drivers agreed that exploring the natural environment was an important motivation as was accessibility to remote and pristine environments and the experience of visiting new and unique coastal locations. Other potential motivations were notable by their relatively modest/low prominence, for example, experiencing wildlife and nature (Coghlan and Prideaux, 2009). In the latter case, wildlife and nature are the subjects of environmental impact of ORVs on beaches, and yet do not feature as prominent motivators for beach drivers. This *might* suggest drivers do not value certain attributes of the coastal environment. This could relate to low awareness and the low promotion of beaches as habitats for wildlife, or from drivers having low regard for these natural values.

Motivations differed between user groups as revealed by their responses to 33 motivational items. People who access beaches in vehicles primarily for the purpose of driving *per se*, have a greater motivation that can be described as *escapism and exploration* compared with those engaged in surfing and swimming or general beach recreational activities. Motivators described by the factor *experience and opportunity* also featured more prominently for those visiting the beach specifically to drive. These findings suggest that access to beaches and opportunities for beach driving are a lesser specific motivation for water-based and general recreationists, and instead the ability to use vehicles may represent a convenience. Those visiting the beach specifically to drive appear ‘pushed’ by their desire for freedom and exploration; while being pulled by accessibility to beaches. Accessibility to quiet and pristine beaches and the feeling of freedom and solitude are primary motivations for those drivers who visit specifically to drive, but

paradoxically are the very attributes compromised by the increasing number of vehicles on beaches.

4.3. Management implications

A substantial body of evidence now exists demonstrating that vehicles cause significant environmental harm when driven on sandy shores and coastal dunes (Melvin et al., 1994; Priskin, 2003b; Stolen, 2003; Schlacher et al., 2007a, b; Schlacher and Thompson, 2008; Schlacher et al., 2008a, b; Schlacher et al., 2013a, b, c; Houser et al., 2013). As beaches are environments of high recreational and economic value (Klein et al., 2004), coastal managers are often charged with balancing the conflicting demands of motorized beach recreation and environmental conservation (Kelly, 2016). Bans of ORVs on beaches requires immense political will and enforcement, and while vehicle numbers are lessened, this approach does not guarantee vehicle-free beaches (Herbig, 2007). Managing vehicles on the coast where this study was done is highly controversial, politicized, and complex, involving an adjacent State who's ban on beach driving displaces especially intense usage of South Australian beaches by ORVs. Changes to beach management involving access by vehicles will doubtlessly have social and economic implications (Jones et al., 2016).

Methods for managing vehicles on beaches include those used for other human-beach impact scenarios. One approach to managing vehicles and their impacts is to change driver behavior through the use of educational tools (e.g., beach signage) and codes of conduct (e.g., driving only by the water's edge) (Kelly, 2016). However, these methods have largely failed to produce widespread ecologically-sensitive driving behavior (Weston et al., 2014). Indeed, education and awareness efforts have rarely translated into reduced environmental impacts if enacted by themselves and without enforcement and consequences (Hungerford and Volk, 1990; Saylan and Blumstein, 2011; Walsh, 1984). We describe heterogeneous motivations and behaviors of drivers which will enable more targeted communication. Specifically, raising awareness of sensitive ecological elements which did not feature prominently among driver motivations (e.g., beach wildlife and nature), and how these can be damaged and conserved, should be given priority. As the intended outcome of this behavior-change effort is reduced impact, measures of success should reflect improved condition in clearly-articulated ecological objectives e.g., particular success rates of nesting birds, or stability or improvements in infaunal assemblages. Undisciplined, one-off, education efforts which lack commitment to tangible reduction of impacts are unlikely to be worthwhile (Saylan and Blumstein, 2011). The approach we suggest relies on twofold investment in education and monitoring of meaningful indicator species (Schlacher et al., 2014) to measure the success of this investment.

One barrier to behavior change is poor articulation of desired behavior (Donovan and Henley, 2010). For example, prescriptions which state “do not disturb wildlife” are difficult to implement or enforce in comparison with, for example, minimum separation distances specified between wildlife and vehicles (Weston et al., 2014). In Australia, speed limits have been the subject of substantive social marketing campaigns, are rigorously enforced and clearly marked, including on beaches (ABC, 2012). However, the finding in this study of a proportion of drivers being drawn to the freedom and adventure associated with beach driving might imply, in some cases, a desire to escape rules and regulations. The propensity to speed by some beach drivers (this study) suggests a reluctance to behave appropriately even with enforcement and clearly articulated laws; for these drivers, softer behavior change programs would seem unlikely to be effective.

Regulation of traffic volumes, perhaps of specific user groups (e.g., those driving along the beach between coastal towns) could be another way of reducing the extent of impacts and could balance the experience of drivers (Hallo and Manning, 2009). Such regulation could be implemented in various ways, perhaps including a licensing or revised permit system featuring mandatory training, or the requirement for

guides and seasonal quotas based on beach carrying capacity for ORVs (Hallo and Manning, 2009). Given the motivations of many of the drivers we surveyed is for specific quiet, remote, pristine beachscapes, it may be possible to identify specific beaches which deliver these experiences (i.e. by value-mapping; Tyrväinen et al., 2007), making them available, while restricting vehicular access to other beaches (see Celliers et al., 2004; McLachlan et al., 2013). High quality ORV experiences are possible, even where conservation imperatives restrict available routes (Hallo et al., 2009) or parts of the beach which can be traversed (Kelly, 2016).

Zoning strategies, such as temporary or permanent partial beach closures, are another form of coastal management that has been successful in managing impacts to beach fauna (Lafferty et al., 2006; Weston et al., 2012a). Although many local residents and visitors support restricted access for vehicles on beaches, implementing these strategies has commonly been met with a lack of support and compliance (Celliers et al., 2004; Ramsdale, 2010). Small exclusion zones around sensitive areas may have particular application for drivers that travel short distances to use the beach to access localities where they engage in non-vehicular recreational activities. Smaller exclusion zones may balance the multi-purpose nature of current beach management (in some parts of the study area for some drivers), and engender reasonable compliance and support. In addition, improved coastal planning and the addition of infrastructure such as access points and carparks, would enable water-based beach users to walk to sites that they would otherwise drive or park on beaches to access. The placement of access points would need to avoid overlap with high biodiversity or sensitive nesting or roosting sites. These approaches are likely to benefit only spatially discrete ecological values (e.g., bird breeding localities), rather than more widespread ecological components such as infauna. They could be supported by GPS-based maps and warning systems which could be implemented on handheld devices (Teacher et al., 2013).

5. Conclusions

Our study describes the nuances of a major yet heterogeneous nature-based recreational pursuit, using ORVs on beaches, where drivers seek natural, pristine, and remote beachscapes or the opportunity to drive or park and engage in recreational activities. Management of ecological impacts of ORVs should explicitly recognize the different ways in which drivers use beaches, and their motivations. The identification of “sacrificial” beaches, which fulfil driver expectations and have low biodiversity/ecological value, may underpin a management approach which sees some beaches as off-limits to ORVs for the purpose of conserving beach ecosystems.

Acknowledgments

Thanks to all participants, Thomas Schneider, all the staff and Rangers at DEWNR (in particular Raelene Mibus and Glenn Jackway), Matthew Royal, Jim Smith, Friends of Little Dip Conservation Park, Sil Lannelo, Tatjana Bunge, Jasmine Story and Alona Charuvi. Write up was supported by the Beach Ecology And Conservation Hub (Venus Bay). This project was conducted under Deakin University (Human Research) Committee Permit No. STEC-59-2013-PETCH-BAKER.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.ocecoaman.2018.05.021>.

References

- Australian Broadcasting Commission (ABC), 2012. 4WD Users Warned to Obey Beach Speed Limits. <http://www.abc.net.au/news/2012-12-11/4wd-users-warned-to->

- obey-beach-speed-limits/4421164.
- Beeco, J.A., Hallo, M.C., Brownlee, T.J., 2014. GPS visitor tracking and recreation suitability mapping: tools for understanding and managing visitor use. *Landsc. Urban Plann.* 127, 136–145.
- Beh, A., Bruyere, B.L., 2007. Segmentation by visitor motivation in three Kenyan national reserves. *Tourism Manag.* 28, 1464–1471.
- Borland, H.P., Schlacher, T.A., Gilby, B.L., Connolly, R.M., Yabsley, N.A., Olds, A.D., 2017. Habitat type and beach exposure shape fish assemblages in the surf zones of ocean beaches. *Mar. Ecol. Prog. Ser.* 570, 203–211.
- Celliers, L., Moffett, T., James, N.C., Mann, B.Q., 2004. A strategic assessment of recreational use areas for off-road vehicles in the coastal zone of KwaZulu-Natal, South Africa. *Ocean Coast Manag.* 47, 123–140.
- Coghlan, A., Prideaux, B., 2009. 4WD Desert Tourism – an Examination of Attitudes, Motivations and Perceptions. Working Paper 43, Desert Knowledge CRC. DKCRC, Alice Springs.
- Cole, D.N., 1994. Backcountry impact management: lessons from research. *Backcountry Recreation Manag.* 31, 10–14.
- Davies, R., Speldewinde, P.C., Stewart, B.A., 2016. Low level off-road vehicle (ORV) traffic negatively impacts macroinvertebrate assemblages at sandy beaches in south-western Australia. *Nat. Sci. Rep.* 6, 24899.
- District Council of Robe, 2017. Demographics. <http://www.council.robe.sa.gov.au/page.aspx?u=264>, Accessed date: 21 February 2018.
- Donovan, R., Henley, N., 2010. Principles and Practice of Social Marketing. Cambridge University Press, Cambridge.
- Edwards, D., Griffin, T., 2013. Understanding tourists' spatial behaviour: GPS tracking as an aid to sustainable destination management. *J. Sustain. Tourism* 21, 580–595.
- Fisher, F., 1998. Recreational impacts on waders on Fraser Island. *Sunbird* 28, 1–11.
- Fuller, N., 2017. Couple Run over as Long Beach Cop Checked on Swimmers. *Cops Say. Newsday, Long Island* 17 July.
- Goossens, C., 2000. Tourism information and pleasure motivation. *Ann. Tourism Res.* 27, 301–321.
- Graefe, A.R., Thapa, B., Confer, J.J., Absher, J.D., 2000. Relationships between Trip Motivations and Selected Variables Among Allegheny National Forest Visitors VOL-4. USDA Forest Service Proceedings, pp. 2000 RMRS-P-15.
- Hallo, J.C., Manning, R.E., Stokowski, P.A., 2009. Understanding and managing the off-road vehicle experience: indicators of quality. *Manag. Leisure* 14, 195–209.
- Hallo, J.C., Manning, R.E., 2009. Understanding and managing the off-road vehicle experience: standards of quality. *Manag. Leisure* 14, 269–285.
- Herbig, F.J.W., 2007. The off-road vehicle beach ban - five years of conservation? A criminological introspection. *Acta Criminol.: S. Afr. J. Crim.* 20, 75–86.
- Hosier, P.E., 1980. Recreational off-road vehicle impacts in coastal North Carolina. *Carolina Plann.* 6, 34–40.
- Houser, C., Labude, B., Haider, L., Weymer, B., 2013. Impacts of driving on the beach: case studies from Assateague Island and Padre Island national seashores. *Ocean Coast Manag.* 71, 33–45.
- Hungerford, H.R., Volk, T.L., 1990. Changing learner behavior through environmental education. *J. Environ. Educ.* 21, 8–21.
- Hvenegard, G.T., 2002. Birder specialization differences in conservation involvement, demographics, and motivations. *Hum. Dimens. Wildl.* 7, 21–36.
- Jones, C., Newsome, D., Macbeth, J., 2016. Understanding the conflicting values associated with motorized recreation in protected areas. *Ambio* 45, 323–330.
- Kelly, J.F., 2016. Assessing the spatial compatibility of recreational activities with beach vegetation and wrack in New Jersey: prospects for compromise management. *Ocean Coast Manag.* 123, 9–17.
- Klein, Y., Osleeb, J., Viola, M., 2004. Tourism-generated earnings in the coastal zone: a regional analysis. *J. Coast Res.* 20, 1080–1088.
- Lafferty, K.D., Goodman, D., Sandoval, C.P., 2006. Restoration of breeding by snowy plovers following protection from disturbance. *Biodiver. Cons.* 15, 2217–2230.
- Luckenbach, R.A., Bury, B.R., 1983. Effects of off-road vehicles on the biota of the algodunes, imperial country, California. *J. Appl. Ecol.* 20, 265–286.
- Maguire, G.S., Miller, K.K., Weston, M.A., Young, K., 2011. Being by the seaside: beach use and preferences among coastal residents of south-eastern Australia. *Ocean Coast Manag.* 54, 781–788.
- Maslo, B., Schlacher, T.A., Weston, M.A., Huijbers, C.M., Anderson, C., Gilby, B.L., Olds, A.D., Connolly, R.M., Schoeman, D.S., 2016. Regional drivers of clutch loss reveal important trade-offs for beach-nesting birds. *PeerJ* 4, e2370v1. <http://dx.doi.org/10.7287/peerj.preprints.2370v1>.
- Mbuteti, P., 2013. Discussion Paper: off Road Vehicle Access and Use South-east Coast SA. Carnegie Mellon University, Adelaide.
- McFarlane, B.L., 1994. Specialization and motivations of birdwatchers. *Wildl. Soc. Bull.* 22, 361–370.
- McLachlan, A., Defeo, O., Jaramillo, E., Short, A.D., 2013. Sandy beach conservation and recreation: guidelines for optimising management strategies for multi-purpose use. *Ocean Coast Manag.* 71, 256–268.
- McLeod, E.M., Guay, P.J., Taysom, A.J., Robinson, R.W., Weston, M.A., 2013. Buses, cars, bicycles and walkers: the influence of the type of human transport on the flight responses of waterbirds. *PLoS One* 8 (12), e82008. <http://dx.doi.org/10.1371/journal.pone.0082008>.
- Meagher, J.J., Schlacher, T.A., Nielsen, T., 2012. Humans alter habitat selection of birds on ocean-exposed sandy beaches. *Divers. Distrib.* 18, 294–306.
- Melvin, S.M., Hecht, A., Griffin, C.R., 1994. Piping plover mortalities caused by off-road vehicles on Atlantic coast beaches. *Wildl. Soc. Bull.* 22, 409–414.
- Mohammad, B.A., Mohammad, A.H., 2010. An analysis of push and pull travel motivations of foreign tourists to Jordan. *Int. J. Bus. Manag.* 5, 41–50.
- Moss, D., McPhee, D.P., 2006. The impacts of recreational four wheel driving on the abundance of the ghost crab (*Ocypode cordimanus*) on a subtropical sandy beach in SE Queensland. *Coast. Manag.* 31, 133–140.
- Murray, D., 2017. Girl, 16, Dies after Midnight Crash on beach Near Yeppoon. *Courier Mail* 26. Nov.
- Olds, A.D., Vargas-Fonseca, E., Connolly, R.M., Gilby, B.L., Huijbers, C.M., Hyndes, G.A., Layman, C.A., Whitfield, A.K., Schlacher, T.A., 2018. The ecology of fish in the surf zones of ocean beaches: a global review. *Fish Fish.* 19, 78–89.
- Priskin, J., 2003a. Physical impacts of four-wheel drive related tourism and recreation in a semi-arid, natural coastal environment. *Ocean Coast Manag.* 46, 127–155.
- Priskin, J., 2003b. Tourist perceptions of degradation caused by coastal nature-based recreation. *Environ. Manag.* 32, 189–204.
- Ramsdale, T.M., 2010. Ecological Impacts of Vehicles on the Sandy Beaches of Southern Adelaide, South Australia. PhD. thesis. School of Biological Sciences, Faculty of Science and Engineering, Flinders University.
- Rees, J., Webb, J., Crowther, M., Letnic, M., 2015. Carrion subsidies provided by fishermen increase predation of beachnesting bird nests by facultative scavengers. *Animal Cons.* 18, 44–49.
- Sánchez-Fernández, R., Iñiesta-Bonillo, M.A., Cervera-Taulet, A., 2016. Environmental sustainability in the Mediterranean destinations: a latent class segmentation analysis. *Env. Eng. Manage* 15, 1501–1510.
- Saylan, C., Blumstein, D., 2011. The Failure of Environmental Education (And How We Can Fix it). Univ of California Press, USA.
- Schlacher, T., Richardson, D., McLean, I., 2008a. Impacts of off-road vehicles (ORVs) on macrobenthic assemblages on sandy beaches. *Environ. Manag.* 41, 878–892.
- Schlacher, T.A., Carracher, L.K., Porch, N., Connolly, R.M., Olds, A.D., Gilby, B.L., Ekanayake, K.B., Maslo, B., Weston, M.A., 2016. The early shorebird will catch fewer invertebrates on trampled sandy beaches. *PLoS One* 11 (8), e0161905. <http://dx.doi.org/10.1371/journal.pone.0161905>.
- Schlacher, T.A., Meager, J., Nielsen, T., 2013a. Habitat selection in birds feeding on ocean shores: landscape effects are important in the choice of foraging sites by oystercatchers. *Mar. Ecol.* 35, 67–76.
- Schlacher, T.A., Morrison, J.M., 2008. Beach disturbance caused by off-road vehicles (ORVs) on sandy shores: relationship with traffic volumes and a new method to quantify impacts using image-based data acquisition and analysis. *Mar. Pollut. Bull.* 56, 1646–1649.
- Schlacher, T.A., Nielsen, T., Weston, M.A., 2013b. Human recreation alters behaviour profiles of non-breeding birds on open-coast sandy shores. *Estuar. Coast Shelf Sci.* 118, 31–42.
- Schlacher, T.A., Schoeman, D.S., Jones, A.R., Dugan, J.E., Hubbard, D.M., Defeo, O., Peterson, C.H., Weston, M.A., Maslo, B., Olds, A.D., Scapini, F., Nel, R., Harris, L.R., Lucuzzi, S., Lastra, M., Huijbers, C.M., Connolly, R.M., 2014. Metrics to assess ecological condition, change, and impacts in sandy beach ecosystems. *J. Environ. Manag.* 144, 322–335.
- Schlacher, T.A., Thompson, L., Price, S., 2007a. Vehicles versus conservation of invertebrates on sandy beaches: mortalities inflicted by off-road vehicles on ghost crabs. *Mar. Ecol.* 28, 354–367.
- Schlacher, T.A., Thompson, L.M.C., 2007. Exposure of fauna to off-road vehicle (ORV) traffic on sandy beaches. *Coast. Manag.* 35, 567–583.
- Schlacher, T.A., Thompson, L.M.C., 2008. Physical impacts caused by off-road vehicles to sandy beaches: spatial quantification of car tracks on an Australian barrier island. *J. Coast Res.* 24, 234–242.
- Schlacher, T.A., Thompson, L.M.C., Price, S., 2007b. Vehicles versus conservation of invertebrates on sandy beaches: quantifying direct mortalities inflicted by off-road vehicles (ORVs) on ghost crabs. *Mar. Ecol.* 28, 354–367.
- Schlacher, T.A., Thompson, L.M.C., Walker, S.J., 2008b. Mortalities caused by off-road vehicles (ORVs) to a key member of sandy beach assemblages, the surf clam *Donax deltoides*. *Hydrobiologia* 610, 345–350.
- Schlacher, T.A., Weston, M.A., Lynn, D.D., Connolly, R.M., 2013c. Setback distances as a conservation tool in wildlife-human interactions: testing their efficacy for birds affected by vehicles on open-coast sandy beaches. *PLoS One* 8 (9), e71200.
- Sheppard, N., Pitt, K.A., Schlacher, T.A., 2009. Sub-lethal effects of off-road vehicles (ORVs) on surf clams on sandy beaches. *J. Exp. Mar. Biol. Ecol.* 380, 113–118.
- Spaul, R.J., Heath, J.A., 2016. Nonmotorized recreation and motorized recreation in shrub-steppe habitats affects behavior and reproduction of golden eagles (*Aquila chrysaetos*). *Ecol. Evol.* 6, 8037–8049.
- Stolen, E.D., 2003. The effects of vehicle passage on foraging behavior of wading birds. *Waterbirds* 26, 429–436.
- Sun, D., Walsh, D., 1998. Review of studies on environmental impacts of recreation and tourism in Australia. *J. Environ. Manag.* 53, 323–338.
- Taylor, A., Prideaux, B., 2008. Profiling four wheel drive tourism markets for desert Australia. *J. Vacat. Mark.* 14, 71–86.
- Teacher, A.G., Griffiths, D.J., Hodgson, D.J., Inger, R., 2013. Smartphones in ecology and evolution: a guide for the app-rehensive. *Ecol. Evol.* 3, 5268–5278.
- Thompson, L.M.C., Schlacher, T.A., 2008. Physical damage to coastal foredunes and ecological impacts caused by vehicle tracks associated with beach camping on sandy shores: a case study from Fraser Island, Australia. *J. Coast Conserv.* 12, 67–82.
- Tyrväinen, L., Mäkinen, K., Schipperijn, J., 2007. Tools for mapping social values of urban woodlands and other green areas. *Landsc. Urban Plann.* 79, 5–19.
- Uysal, M., Jurowski, C., 1994. Testing the push and pull factors. *Ann. Tourism Res.* 21, 844–846.
- Vivian, E.V.C., Schlacher, T.A., 2015. Intrinsic and utilitarian valuing on K'gari-Fraser Island: a philosophical exploration of the modern disjunction between ecological and cultural valuing. *Aust. J. Environ. Manag.* 22, 149–162.
- Walker, S.J., Schlacher, T.A., 2011. Impact of a pulse human disturbance experiment on macrofaunal assemblages on an Australian sandy beach. *J. Coast Res.* 27, 184–192.
- Walsh, M., 1984. Environmental education: a decade of failure but some hope for the future. *Aust. J. Env. Education* 1, 21–24.

- Wang, C.P., Li, C., Liu, S.T., 2016. A multidimensional environmental value orientation approach to forest recreation area tourism market segmentation. *Forests* 7, 92. <http://dx.doi.org/10.3390/f7050092>.
- Westcott, F., Andrew, M.E., 2015. Spatial and environmental patterns of off-road vehicle recreation in a semi-arid woodland. *Appl. Geogr.* 62, 97–106.
- Weston, M.A., Dodge, F., Bunce, A., Nimmo, D.G., Miller, K.K., 2012a. Do temporary beach closures assist in the conservation of breeding shorebirds on recreational beaches? *Pac. Con. Biol.* 18, 47–55.
- Weston, M.A., Ehmke, G.C., Maguire, G.S., 2011. Nest return times in response to static versus mobile human disturbance. *J. Wildl. Manag.* 75, 252–255.
- Weston, M.A., McLeod, E.M., Blumstein, D.T., Guay, P.J., 2012b. A review of flight-initiation distances and their application to managing disturbance to Australian birds. *Emu* 112, 269–286.
- Weston, M.A., Schlacher, T.A., Lynn, D., 2014. Pro-environmental beach driving is uncommon and ineffective in reducing disturbance to beach-dwelling birds. *Environ. Manag.* 53, 999–1004.
- Williams, A.J., Ward, V.L., Underhill, L.G., 2004. Waders respond quickly to the banning of off road vehicles on beaches in South Africa. *Wader Stud. Grp Bull.* 104, 79–81.

SCIENTIFIC REPORTS

OPEN

Low level off-road vehicle (ORV) traffic negatively impacts macroinvertebrate assemblages at sandy beaches in south-western Australia

Received: 12 October 2015

Accepted: 06 April 2016

Published: 28 April 2016

Rebecca Davies*, Peter C. Speldewinde* & Barbara A. Stewart*

Off-road vehicle use is arguably one of the most environmentally damaging human activities undertaken on sandy beaches worldwide. Existing studies focused on areas of high traffic volumes have demonstrated significantly lower abundance, diversity and species richness of fauna in zones where traffic is concentrated. The impact of lower traffic volumes is unknown. This study aimed to investigate the impacts of relatively low-level vehicle traffic on sandy beach fauna by sampling invertebrate communities at eight beaches located in south-western Australia. We found that even low-level vehicle traffic negatively impacts the physical beach environment, and consequently, the ability of many species to survive in this habitat in the face of this disturbance. Compaction, rutting and displacement of the sand matrix were observed over a large area, resulting in significant decreases in species diversity and density, and measurable shifts in community structure on beaches that experienced off-road vehicle traffic. Communities at impact sites did not display seasonal recovery as traffic was not significantly different between seasons. Given a choice between either reducing traffic volumes, or excluding ORV traffic from beaches, our results suggest that the latter would be more appropriate when the retention of ecological integrity is the objective.

Sandy beaches represent an important transition zone between marine and terrestrial environments¹, where physical interactions between sediment and water movement determine beach morphology². Beaches range from reflective (narrow, steep and high energy) to dissipative (wide, flat and low-energy), with most being an intermediate between these extremes¹. The physical environment of sandy beaches is becoming intensely modified by anthropogenic activities, partly due to the advent of mass tourism and population growth in coastal areas^{3,4}. Overall these factors are radically altering the ecology and morphology of coastal ecosystems, and increasingly, coasts are becoming sites of conflict over resource use between human demands and ecosystem preservation⁵. Threats to beach ecosystems arise from a range of stressors that span differing impacts, from global effects (e.g. sea level rise) to more localized ones (e.g. trampling of dune vegetation)¹. Off-road vehicle (ORV) use is arguably one of the most environmentally damaging human activities undertaken on sandy beaches^{6,7} and can dramatically alter the physical properties of coastlines through the compaction, rutting and displacement of the sand matrix⁸. This vehicle traffic can substantially decrease organic matter in soils⁹ and can change the microclimate of the sand⁵.

This modification of sandy beach morphology is particularly problematic as biotic communities in these environments are primarily physically controlled, with ecosystem functioning, zonation and community structure primarily linked to beach morphological state². In particular, community structure is correlated with sand particle size and beach face slope^{10,11}, and species richness decreases from dissipative to reflective beaches¹². Beach species are also generally not found in other environments as they often display unique adaptations to the dynamic system they inhabit¹³. Macroinvertebrate communities at sandy beaches are represented by most invertebrate

Centre of Excellence in Natural Resource Management, The University of Western Australia, PO Box 5771, Albany, WA 6331, Australia. *These authors contributed equally to this work. Correspondence and requests for materials should be addressed to P.C.S. (email: Peter.speldewinde@uwa.edu.au)

Season	Beach	No. tyre tracks	No. tracks/metre	Overall disturbed	Upper zone disturbed	Deepest rut	Widest rut
Summer	Nanarup Beach	110	1.2–1.52	62.0%	92.5%	22 cm	45 cm
	Cheyne's Beach	75	0.69–1.58	40.0%	75.0%	3 cm	27 cm
	Mutton Bird Beach	93	1.03–1.35	50.0%	80.0%	25 cm	29 cm
	Gull Rock Beach	47	0.46–0.60	42.5%	25.0%	26 cm	32 cm
Winter	Nanarup Beach	33	0.48–0.67	43.0%	60.0%	29 cm	22 cm
	Cheyne's Beach	152	1.50–1.68	61.7%	26.6%	3 cm	28 cm
	Mutton Bird Beach	28	0.29–0.86	32.5%	60.0%	15 cm	32 cm
	Gull Rock Beach	34	0.46–0.52	36.7%	52.5%	23 cm	27 cm

Table 1. Overview of ORV traffic distribution and impact along the four ORV affected beaches.

phyla and are important components of both marine and terrestrial food webs. They predominately feed on algae and phytoplankton and can encompass scavenger, predator and filter feeder species¹⁴ as well as provide key food sources for higher order consumers such as fish and shorebirds^{14,15}.

Investigations of the impacts of ORV use on sandy beach biota have focused either on indicator species^{7,16–20} or on macroinvertebrate assemblages^{21–23}. Impacts on indicator species have been shown to be negative. For example, both ghost crabs (*Ocypode* species) and surf clams (*Donax deltoids*) had lower densities and decreased body sizes at beaches with ORV traffic^{7,16,17,24}, with decreased home ranges¹⁹ and changed burrow architecture¹⁸ recorded for ghost crabs. Sheppard *et al.*²⁵ found that the body mass index of the surf clam was 16% less at beaches open to vehicle traffic, and after 30 traffic passes, the burrowing ability of these clams was significantly impaired. Studies into the effects of ORV traffic on whole suites of species have been limited despite the fact that these taxa are vulnerable, as they generally inhabit zones where traffic is concentrated^{21–23}. Existing Australian studies on the impacts of ORVs on beach morphology²² and macrobenthic assemblages^{21,23} in Queensland have been conducted in areas with high traffic volumes; these authors have reported 500–727 vehicles crossing their impact beaches per day, with as many as 5000 vehicles (South-East Queensland beaches) recorded in a single day during peak holiday periods and public holidays. As a result, ORV-impacted beaches had significantly lower abundance, diversity and species richness of macrobenthos species, particularly in the upper and middle zones where traffic was concentrated²³. As well as the impacts on invertebrates, ORV use on beaches also has impacts on larger vertebrates, in particular nesting birds^{26,27} where ORV use can interfere with behaviour and/or disturb nests.

The impact of lower traffic volumes on macroinvertebrate communities inhabiting sandy beaches in Australia is unknown. One of the options available to managers aiming to decrease the deleterious environmental impacts of ORVs on sandy beaches would be to control access, and thus traffic volumes. For example, ORV access to Sodwana Bay in KwaZulu-Natal, South Africa is limited to 200 vehicles per day between 06:00 and 18:00 during weekends and holidays, with no access outside of these periods²⁰. These restrictions have minimised the impacts on fauna²⁰. In order to determine threshold values of traffic volumes at which negative impacts occur for beach fauna in Australia, the impact of low-level traffic volumes should be further investigated. The beaches surrounding the south coast township of Albany, Western Australia provide a good opportunity for such a study, as this area has a mix of both ORV-impacted, and non-impacted beaches. Although formal traffic surveys have not been conducted for these ORV-impacted beaches, estimates of traffic volume based on tyre tracks, informal observations and consultation with beach users at four ORV-impacted beaches vary from 12–50 vehicles per day in summer to 7–40 vehicles per day in winter. In contrast studies in Queensland have quoted figures of approximately 300 vehicles a day²². This study aimed to investigate the impacts of this relatively low-level vehicle traffic on sandy beach fauna in south-western Western Australia. More specifically, we sampled both ORV-impacted and non-impacted beaches to (i) describe the habitat and sediment characteristics of these beaches, (ii) document ORV traffic distribution and impact on the physical environment of beach faces of ORV-impacted beaches, and (iii) investigate the invertebrate fauna response to this ORV traffic. This is the first study of the impacts of ORV traffic on macroinvertebrate fauna in south-western Australia, and is also the first to document impacts of relatively low-level traffic in Australia.

Results

Habitat and sediment characteristics. All the beaches studied had similar sediment properties and habitat characteristics for both sampling periods (ANOSIM, $p = 0.1$, summer: $r = -0.177$, winter: $r = -0.208$). Average sediment grain size varied from 149.9 to 295.8 microns, sediment moisture content ranged from 2.1–18.6% and sand fall velocity ranged from 1.74 to 4.21 cm/sec for all beaches (Table 1). Beach width ranged from 14.7 to 34.0 m, slope ranged from 2.8 to 10.3 degrees, average time between waves varied from 6.8–12.8 seconds and average wave breaker height was 0.70–1.25 m on the days sampled (Table 1). There were no significant differences in beach morphology between control and impact beaches as measured by the four beach indices during both summer and winter (ANOSIM, $p = 0.1$, summer: $r = -0.115$; winter: $r = 0.073$), and all beaches recorded fluctuations between low reflective and high intermediate morphological states. Beach characteristics remained similar throughout the study period, with only beach face slope showing significant differences between the seasons (ANOVA, $p = 0.002$, $n = 16$) as average slope in winter was considerably steeper than during summer (Table 1).

	DF	Total Abundance	Density	Species Diversity
Main effects				
Category (Impact vs Control)	1	<0.001	<0.001	<0.001
Beach (nested)	7	<0.001	<0.001	<0.001
Season	1	<0.001	<0.001	0.186
Zone	1	<0.001	<0.001	0.010
Two-way interactions				
Category \times Season	1	0.133	0.320	0.015
Beach \times Season	7	0.002	<0.001	0.002
Category \times Zone	1	<0.001	<0.001	0.050
Beach \times Zone	7	<0.001	<0.001	0.171
Season \times Zone	1			
Three-way interactions				
Category \times Season \times Zone	1	0.966	0.146	0.308
Beach \times Zone \times Season	7	0.792	0.170	0.583
Residual	444			
Total	479			

Table 2. Hierarchical Analysis of Variance (ANOVA) summary comparing total abundance (individuals per meter squared), species density (number of species per sample) and species diversity (Shannon Wiener Diversity Index) across several temporal and spatial scales using transformed $\log(X + 1)$ data.

Vehicle traffic. No tyre tracks were recorded during either season at control beaches. A total of 325 individual tyre tracks were mapped during the summer sampling period for ORV-impacted beaches, with Nanarup Beach having the highest number (110) and Gull Rock Beach, the least number of tyre tracks (47) (Table 2). Most of the impact beaches had an average number of tracks per linear metre of beach face above one, ranging from 0.53 tracks per meter (Gull Rock) to 1.58 tracks per meter (Cheynes Beach).

Off-road vehicle traffic was usually concentrated in the dry upper zone, ranging from 25% disturbance (Gull Rock Beach) to over 90% (Nanarup Beach) of this area (Table 2). Consequently this upper zone was considerably rutted, displaced and compacted. The deepest ruts occurred in the soft sand near the foredune and the widest ruts occurred lower down on the beach face towards the swash zone. Overall, ruts as deep as 26 cm (Gull Rock Beach) were recorded in the upper zone, although on the more naturally compacted sand of Cheynes Beach, deepest ruts were only 3 cm. Although there was an overall decrease in the number of tyre tracks observed in winter (total of 247) when compared to summer (total of 325), mean numbers of tyre tracks per beach for summer and winter did not differ significantly (ANOVA, $p = 0.57$, $n = 8$). Similarly, there were no significant differences between summer and winter in both average tracks per linear metre of beach face and the maximum number of tracks per metre recorded (ANOVA, $p = 0.51$ and 0.37 respectively, $n = 8$), indicating that ORV traffic in the Albany region was similar for both seasons at the time of sampling.

Invertebrate fauna response. A large proportion of samples (42.1%) collected from both impact and control sites were devoid of fauna (Fig. 1). The control beaches had an average of 10% empty cores for both upper and lower zones. Ledge Beach had no empty cores, with fauna being collected from every level. Two control beaches had fauna present in every core taken in the upper levels in summer (Cosy Corner and Ledge Beaches). The ORV-impacted sites (mean of 10.56 void cores) had five times more void cores than the control beaches (mean of 2.06 void cores) for both seasons (ANOVA, $p < 0.001$, $n = 16$). For these sites, there were significantly more void cores in the upper (mean of 12.62 void cores) than in the lower (8.50 void cores) zone (ANOVA $p = 0.026$, $n = 8$). At least half of the cores taken from the upper zone at these four ORV-impact beaches were devoid of fauna, with Nanarup Beach (93.3% of cores from upper zone), Mutton Bird Beach (80%) and Gull Rock Beach (73.3%) having significantly high numbers of void cores in this zone. Although Cheynes Beach (53%) had a lower number of void cores collected from the upper zone, values were still comparatively higher than for the control beaches. Overall, there was a significant difference in void core numbers between the control and impact beaches for both the upper (impacted beaches: mean of 12.62 void cores; control beaches: 1.88 void cores; $n = 8$) and lower (impacted beaches: 8.50 void cores; control beaches: 2.25 void cores; $n = 8$) levels (ANOVA, $p < 0.001$ and $p = 0.003$ respectively, $n = 120$).

For cores that contained fauna, 23 different species were recorded, with 4616 individuals sampled. Numerically, crustaceans dominated, representing 42% of individuals collected (12 species). Major crustacean groups were Isopoda (contributing 26.9% to the whole), Decapoda (8.5%) and Amphipoda (6.6%). Insects were the second most speciose group, with seven species recorded, however they contributed substantially less to the overall numbers, making up only 14.6% of the individual count. The single most abundant species was the mollusc *Paphies elongate*, with 1922 individuals collected over the entire sampling period. Overall, the ORV-impacted beaches demonstrated significantly lower species richness, species diversity (as measured by Shannon-Wiener Index) and abundance than control beaches (ANOVA, $p < 0.001$, $n = 480$) for both upper and lower zones (Fig. 2). Three-way ANOVA revealed significant differences for both category (impact vs. control) and beach (nested within category). There was also a significant two-way interaction between beach and season,

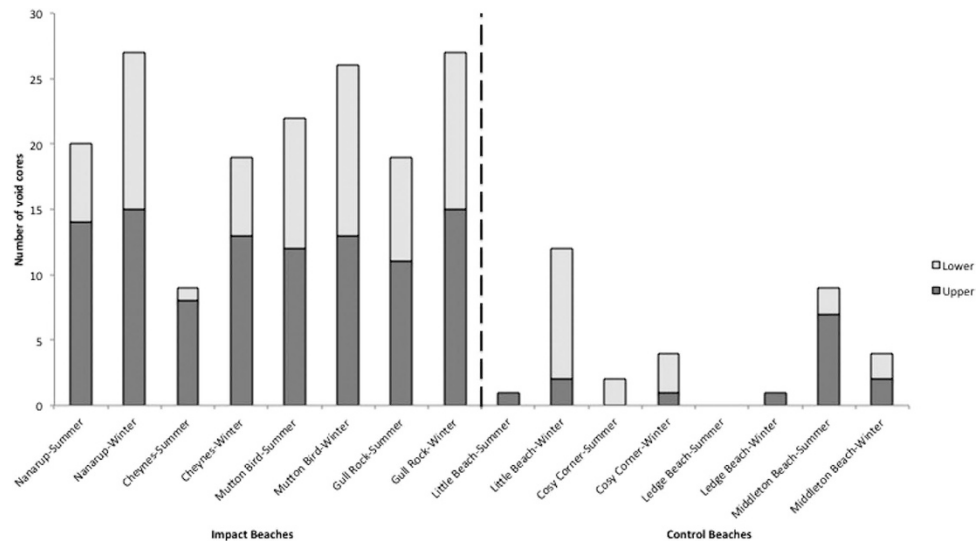


Figure 1. Number of levels sampled at the upper and lower zones of the eight sites which displayed no faunal occurrences(void samples). There were 30 levels excavated at each beach.

and beach and zone (Table 3). In the upper zone, species richness was a mean of 1.83 (S.D. = 1.19) species per sample at the control beaches and 0.20 (S.D. = 0.53) species per sample at the impact sites. Similarly, species richness in the lower zone was 2.01 (S.D. = 1.46) species per sample at the control beaches and 0.80 (S.D. = 1.17) species per sample at the impact beaches. The Shannon-Wiener diversity index for the upper zones of the control beaches was 0.39 (S.D. = 0.43) and 0.20 (S.D. = 0.53) for the upper zones of the impact beaches. Values for species diversity followed a similar trend for the lower zones (impact beaches: 0.80 (S.D. = 1.17); control beaches: 2.00 (S.D. = 1.46)). For the upper zones, macroinvertebrate abundance was considerably higher at control beaches (22.0 individuals per m²) than at impact beaches (1.7 individuals per m²). In contrast, abundance for the lower zones was similar (control beaches: mean of 36.8 individuals per m²; impact beaches: 24.2 individuals per m²).

Although NMDS analysis revealed considerable overlap among sites in terms of community structure, particularly in the lower zone, there were significant differences in community structure for the lower zone between control and impact beaches in summer (ANOSIM, $p = 0.1$, $r = 0.222$ and $p = 0.1$, $r = 0.111$ respectively, $n = 240$). In the upper zone, where ORV traffic was more frequent, community structure was significantly different between control and impact beaches for both summer and winter (ANOSIM, $p = 0.1$, $r = 0.42$ and $p = 0.1$, $r = 0.434$ respectively). These shifts in community structure were most strongly correlated to vehicle traffic indices and average time between waves, rather than a combination of environmental factors. For the upper zone, no single soil or beach habitat characteristic was more strongly correlated to changes in faunal composition than number of vehicle tracks, average % overall beach face disturbed or average tracks per metre. For the lower zone which is characterised by lower traffic intensity and swash-effects, shifts in community structure were more strongly correlated with average time between waves than any traffic index. This was closely followed by average percentage overall beach face disturbed, which indicates interplay between these characteristics in forming macrobenthic species composition.

Discussion

This study clearly highlights that even low-level ORV traffic negatively impacts the physical beach environment, and consequently, the ability of many species to survive in this habitat in the face of this disturbance. Compaction, rutting and displacement of the sand matrix were observed over a large area, with shearing effects sometimes extending up to a depth of over 20 cm. As a result, communities on beaches subjected to traffic displayed significantly decreased species diversity and density, causing measurable shifts in community structure.

Our study also revealed three other key findings. Firstly, despite recommendations that ORV vehicles drive on the hard compacted sand of the lower zone²¹, ORV traffic was heavily concentrated in the upper zone, leading to a clear delineation of the beach face^{23,28}. Secondly, impacts on faunal assemblages were greatest at the more intensely used upper zones with marked differences recorded in faunal abundances, species richness and density. Both zones displayed significant differences in species richness and species diversity among control and impact sites; however the differences were more noticeable for the upper than for the lower zone. This is in contrast to the study of Schlacher *et al.*²³ who reported similar abundances, species richness and species diversity among impact and control beaches for lower zones in Queensland. It appears therefore that ORV impacts in the foreshore area (lower zone) are greater in south-western Australia than at other beaches studied. Schlacher *et al.*²³ reported traffic numbers that were significantly higher than observed in our study, however, they found that 91% of this traffic traversed the upper and middle shore. In our study, occurrence of tyre tracks showed that ORV traffic was occurring at the lower zones at greater percentages than that reported by Schlacher *et al.*²³ The most probable explanation of this differing traffic behaviour is that beaches in south-western Australia were much narrower (approximately 15–35 m) than those studied by Schlacher *et al.*²³ (approximately 57–75 m), forcing many drivers to traverse a greater percentage of the beach face. Deep ruts were also found along the upper zone at narrow

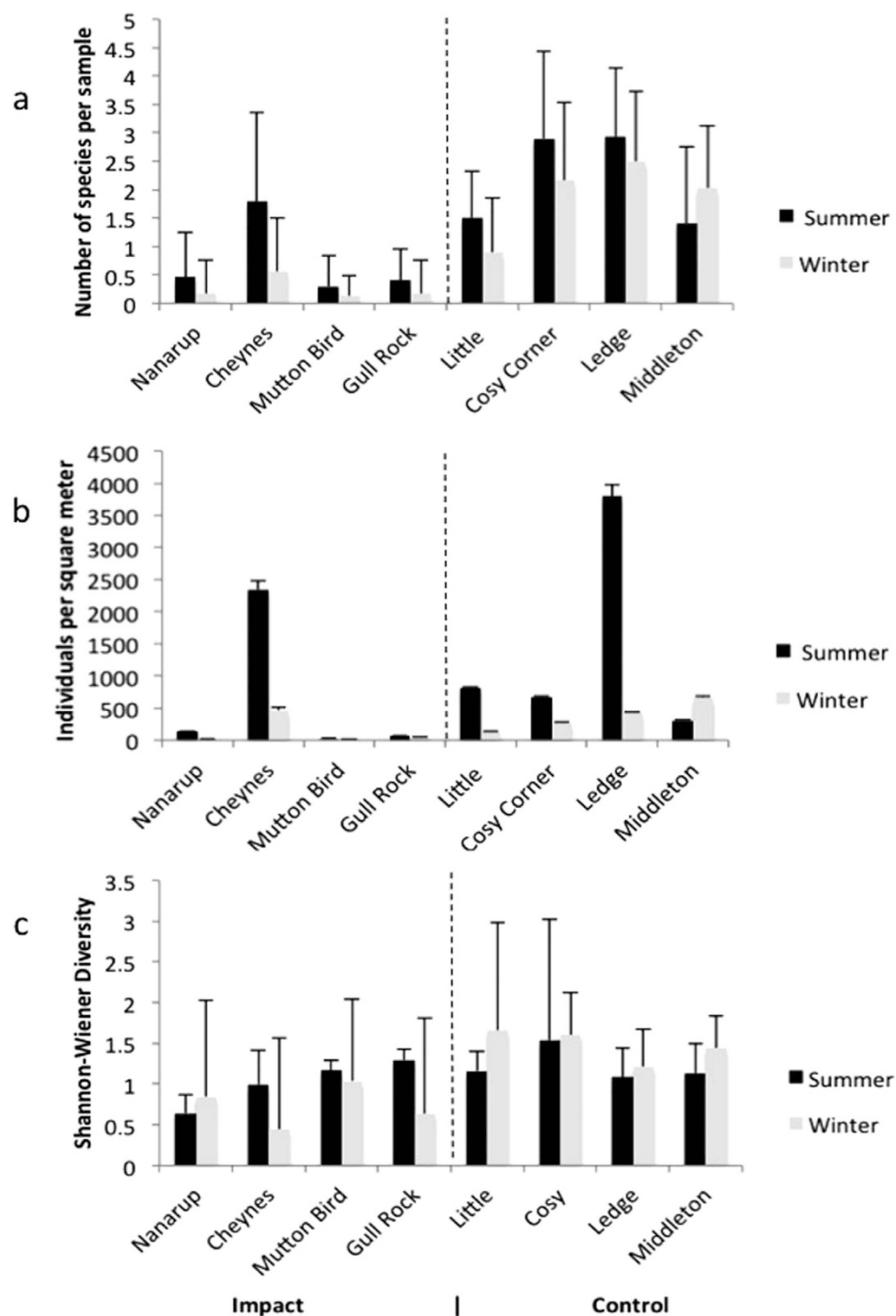


Figure 2. Differences in (a) Total abundances (individuals per square meter), (b) species density (number of species per sample) and (c) species diversity (Shannon Wiener Diversity Index) between control and impact sites during both summer and winter sampling.

sections of beach and traffic may have needed to drive lower down towards the swash zone in order to negotiate around this rut. For the beaches studied in Queensland, the greater beach width meant it was probably unnecessary to drive along the swash zone, and thus the frequency of traffic and its impacts were not so severe in this region. Thirdly, our results suggest that ORV impacts are more ‘press’ than ‘pulse’ disturbances²⁹, with the number of tyre tracks displaying no significant difference between the summer and winter months. Pulse disturbances are short and clearly delineated events that occur over a short period of time; in contrast press disturbances are ongoing and maintained at a constant level. Although south-western Australia has a tourist on-peak season in summer and less busy winter period, this was not reflected by vehicle usage along beaches near Albany. This ongoing pressure meant that seasonal recovery of communities was not apparent as the impact beaches consistently recorded significantly different abundances, species diversity and density, and void core counts across both seasons.

	Upper Zone Min-Max	Lower Zone Min-Max
Sand Characteristics		
Sand Grain Size	0.103–0.106	0.056–0.058
Sorting	0.153–0.156	0.06–0.06
Kurtosis	0.133–0.134	0.052–0.053
Skewness	0.101–0.104	0.059–0.064
Sand Moisture Content	0.028	–0.033
Beach Characteristics		
Slope	0.065–0.066	0.066–0.069
Width	0.061–0.064	0.068–0.07
Average Wave Breaker Height	0.038–0.042	0.059–0.06
Average Time Between Waves	0.242–0.244	0.219–0.220
Vehicle Traffic		
Number of Tracks	0.503–0.504	0.176–0.178
Average Percentage Overall Disturbed	0.513–0.514	0.209–0.210
Tracks per meter	0.509–0.510	0.185–0.191

Table 3. Summary of BIO-ENV analysis looking at matches in environmental variable with faunal composition. Values are correlation coefficient on characteristics that can best explain the differences between impact and control sites in macroinvertebrate communities. Values are based on Spearman correlation coefficients and analyses was undertaken for both raw data and $\log(X + 1)$ transformations.

In conclusion, our results show that macroinvertebrate species at beaches with relatively low-levels of ORV traffic are as negatively affected as those at more intensively used beaches. This result has implications both globally and in south-western Australia, as sandy beaches continue to come under pressure from off road vehicle use. While completely excluding ORV traffic from beaches may not be feasible on all beaches some alternative management options are available such as restricting ORV use on stable beaches while allowing them on more dynamic beaches, having closed seasons on beaches to allow time for recovery and directing ORV use to low sections of the beach which are more dynamic rather than the higher sections which are more stable. Restricting access on narrower beaches may be more important than on wide beaches as the wider beaches allow more use of the lower parts of the beach. Given a choice between either reducing traffic volumes, or excluding ORV traffic from beaches, our results suggest that the latter would be more appropriate when the retention of ecological integrity is the objective.

Methods

Study area and sampling. Sampling was conducted at four beaches subjected to ORV traffic (impact beaches) and four without any vehicle use (control beaches). All eight beaches were located in south-western Australia near the city of Albany (Fig. 3). This region experiences a Mediterranean climate, with mild winters and hot, dry summers and the coast is open to the Southern Ocean. It has a mixed and mainly diurnal tidal regime, with the spring tidal range being less than 0.5 m³⁰. The increasing use of the south-western Australian coast has led to significant pressures on the south coast marine environment. Off road vehicle use in the area has already been implicated in the decline of some shorebird species and during recent public consultation, ORV access to beaches was the issue of most concern³¹.

Each beach was sampled on two occasions, once during a period corresponding to high-intensity ORV use in the austral summer (February 2009 after peak tourist holidays), and once during winter when traffic volumes were low (August 2009). Benthic macroinvertebrates were sampled across three randomly placed transects perpendicular to the shoreline, with each transect positioned from the base of the foredune to the swash zone. Ten levels were sampled along each individual transect, with the upper levels (1–5) beginning at the foredune ('upper zone'), and the lower levels (6–10) located closer to the water ('lower zone'). At each level, a composite sediment sample was collected by combining three separate quadrats (25 cm deep, 30 × 50 cm) and then washed through a 1 mm mesh sieve. Fauna collected was preserved in 80% ethanol and later identified to the lowest possible taxon.

At the four impact beaches, the physical disturbances caused by ORV traffic was quantified by counting and measuring vehicle wheel ruts crossing each transect. As the ruts contained more than one tyre track, visual identification of different tyre patterns was used to estimate the number of tyre tracks in each rut. The percentage overall beach-face disturbed by vehicle traffic was also quantified along each transect. Vehicle ruts have been shown to be a good indicator of vehicle traffic with increase in the number of ruts associated with increased vehicle traffic³².

During both sampling periods, habitat characteristics were sampled at each beach. Sediment cores (25 cm diameter, 20 cm deep) were excavated at each level (1–10) along each transect. Sediment moisture content was determined in the laboratory by measuring the weight loss after drying to constant weight (105 degrees Celsius for 48 hours). Granulometry was ascertained by combining the sediment samples for each respective beach and dry sieving through a series of nested sieves (1000, 500, 250, 125 and 63 microns). Sediment statistics (average grain size, sorting, kurtosis and skewness) were calculated using the Folk and Ward method in the GRADISTAT software package³³. Additional beach characteristics measured at each transect were width and slope (from

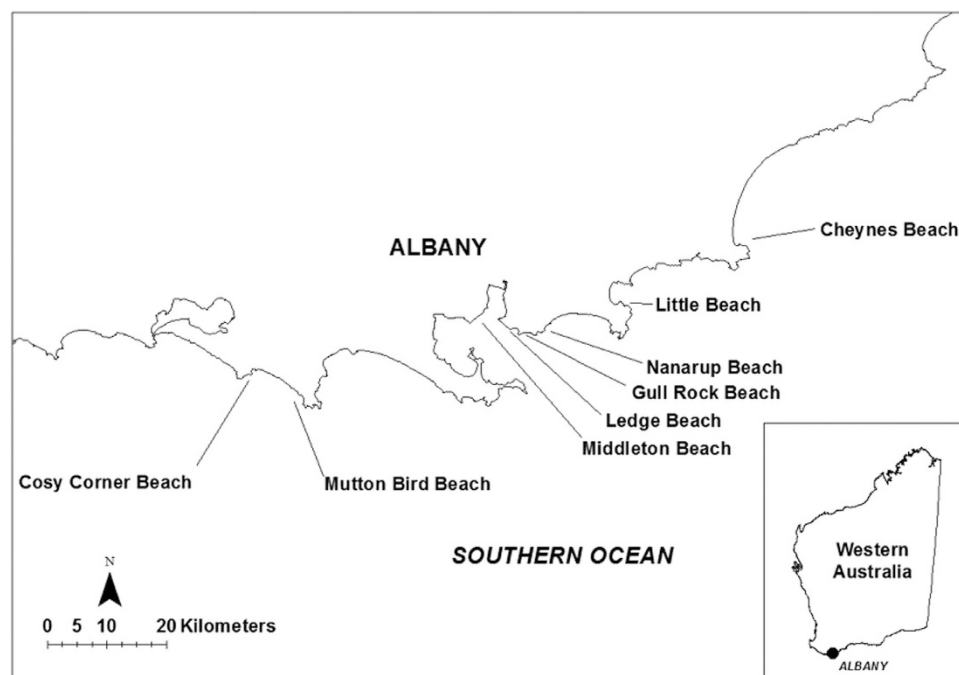


Figure 3. Location of study sites (Generated in ArcGIS 10.2).

foredune to swash zone), time between waves (in seconds) and wave breaker height. Beach morphological type (dissipative, intermediate or reflective) was determined using four different models: Dean's parameter (D), Beach State Index (BSI), Beach State (BI) and the Beach Deposit Index (BDI).

Statistical analysis. Significant differences in habitat characteristics, volumes of traffic (as measured by tyre tracks) and macroinvertebrate abundance, species density and species diversity (Shannon-Wiener Index) among sites and between seasons, were determined using one-way Analysis of Variance (ANOVA). Hierarchical three-way ANOVA utilized both raw and transformed ($\log(X + 1)$) data. The variables included in this analysis were (i) category (impact vs control), (ii) beach (nested within category), (iii) season and (iv) zone. In a multivariate approach, significant differences among sites (based on habitat characteristics and beach indices) and community structure were determined using ANOSIM in the PRIMER (Plymouth Routines in Multivariate Ecological Research) statistical software package. Links between faunal composition and habitat characteristics (sediment and beach characteristics, as well as traffic variables) were analysed using BIO-ENV in PRIMER.

References

1. Defeo, O. *et al.* Threats to sandy beach ecosystems: a review. *Estuarine, Coastal and Shelf Science* **81**, 1–12 (2009).
2. Brown, A. & McLachlan, A. Sandy shore ecosystems and the threats facing them: some predictions for the year 2025. *Environmental Conservation* **29**, 62–77 (2002).
3. Nordstrom, K. F. *Beaches and Dunes of Developed Coasts* (Cambridge University Press, 2004).
4. Roberts, C. M. & Hawkins, J. P. Extinction risk in the sea. *Trends in Ecology & Evolution* **14**, 241–246 (1999).
5. McAtee, J. W. & Drawe, D. L. Human impact on beach and foredune vegetation of north padre island, texas. *Environmental Management* **4**, 527–538 (1980).
6. Godfrey, P. & Godfrey, M. Ecological effects of off-road vehicles on cape-cod. *Oceanus* **23**, 56–67 (1980).
7. Moss, D. & McPhee, D. The impacts of recreational four-wheel driving on the abundance of the ghost crab (ocypode cordimanus) on a subtropical sandy beach in se queensland. *Coastal Management* **34**, 133–140 (2006).
8. Anders, F. J. & Leatherman, S. P. Disturbance of beach sediment by off-road vehicles. *Environmental Geology and Water Sciences* **9**, 183–189 (1987).
9. Wilshire, H., Nakata, J., Shipley, S. & Prestegard, K. Impacts of vehicles on natural terrain at seven sites in the san francisco bay area. *Environmental Geology* **2**, 295–319 (1978).
10. Brazeiro, A. *et al.* Relationship between species richness and morphodynamics in sandy beaches: what are the underlying factors? *Marine Ecology Progress Series* **224**, 35–44 (2001).
11. McLachlan, A. & Dorvlo, A. Global patterns in sandy beach macrobenthic communities. *Journal of Coastal Research* 674–687 (2005).
12. Defeo, O. & McLachlan, A. Patterns, processes and regulatory mechanisms in sandy beach macrofauna: a multi-scale analysis. *Marine Ecology Progress Series* **295**, 1–20 (2005).
13. Schlacher, T. A. *et al.* Sandy beach ecosystems: key features, sampling issues, management challenges and climate change impacts. *Marine Ecology* **29**, 70–90 (2008).
14. McLachlan, A. & Brown, A. C. *The ecology of sandy shores* (Academic Press, 2010).
15. Heymans, J. & McLachlan, A. Carbon budget and network analysis of a high-energy beach/surf-zone ecosystem. *Estuarine, Coastal and Shelf Science* **43**, 485–505 (1996).
16. Steiner, A. J. & Leatherman, S. P. Recreational impacts on the distribution of ghost crabs ocypode quadrata fab. *Biological Conservation* **20**, 111–122 (1981).
17. Schlacher, T. A., Thompson, L. & Price, S. Vehicles versus conservation of invertebrates on sandy beaches: mortalities inflicted by off-road vehicles on ghost crabs. *Marine Ecology* **28**, 354–367 (2007).

18. Lucrezi, S. & Schlacher, T. A. Impacts of off-road vehicles (orvs) on burrow architecture of ghost crabs (genus *ocypode*) on sandy beaches. *Environmental management* **45**, 1352–1362 (2010).
19. Schlacher, T. A. & Lucrezi, S. Compression of home ranges in ghost crabs on sandy beaches impacted by vehicle traffic. *Marine biology* **157**, 2467–2474 (2010).
20. Lucrezi, S., Saayman, M. & van der Merwe, P. Impact of off-road vehicles (orvs) on ghost crabs of sandy beaches with traffic restrictions: A case study of sodwana bay, south africa. *Environmental management* **53**, 520–533 (2014).
21. Schlacher, T. A. & Thompson, L. M. Exposure of fauna to off-road vehicle (orv) traffic on sandy beaches. *Coastal Management* **35**, 567–583 (2007).
22. Schlacher, T. A. & Thompson, L. M. Physical impacts caused by off-road vehicles to sandy beaches: spatial quantification of car tracks on an australian barrier island. *Journal of Coastal Research* **24**, 234–242 (2008).
23. Schlacher, T. A., Richardson, D. & McLean, I. Impacts of off-road vehicles (orvs) on macrobenthic assemblages on sandy beaches. *Environmental Management* **41**, 878–892 (2008).
24. Schlacher, T. A., Thompson, L. M. & Walker, S. J. Mortalities caused by off-road vehicles (orvs) to a key member of sandy beach assemblages, the surf clam *donax deltoideus*. *Hydrobiologia* **610**, 345–350 (2008).
25. Sheppard, N., Pitt, K. A. & Schlacher, T. A. Sub-lethal effects of off-road vehicles (orvs) on surf clams on sandy beaches. *Journal of Experimental Marine Biology and Ecology* **380**, 113–118 (2009).
26. Borneman, R. E., T.E. & Simons, T. Off-road vehicles affect nesting behaviour and reproductive success of American oystercatchers *haematopus palliatus*. *IBIS* doi: 10.1111/ibi.12358.
27. Van de Voorde, W. M., S.V. & Brown, M. Differential reactions to anthropogenic disturbance by two ground-nesting shorebirds. *Ostrich* **86**, 43–52 (2016).
28. Kluff, J. & Ginsberg, H. *The effects of off-road vehicles on barrier beach invertebrates at Cape Cod and Fire Island national Seashores* (National Park service, US Department of the Interior, 2009).
29. Glasby, T. & Underwood, A. Sampling to differentiate between pulse and press perturbations. *Environmental Monitoring and Assessment* **42**, 241–252 (1996).
30. Sanderson, P., Eliot, I., Hegge, B. & Maxwell, S. Regional variation of coastal morphology in southwestern australia: a synthesis. *Geomorphology* **34**, 73–88 (2000).
31. Environments, C. Draft southern shore 2009–2030: A strategy to guide coastal zone planning and management in the south coast region of western australia (2009).
32. Schlacher, T. A. & Morrison, J. M. Beach disturbance caused by off-road vehicles (orvs) on sandy shores: Relationship with traffic volumes and a new method to quantify impacts using image-based data acquisition and analysis. *Marine Pollution Bulletin* **56**, 1646–1649 (2008).
33. Blott, S. J. & Pye, K. Gradistat: a grain size distribution and statistics package for the analysis of unconsolidated sediments. *Earth surface processes and Landforms* **26**, 1237–1248 (2001).

Acknowledgements

We thank Danny Cooper, Garnet O'Connell, Peter Davies, Ben Sheppard, Julian Neville and Michael Davis for assistance with field sampling.

Author Contributions

R.D. conceived and designed the field sampling program with suggestions and input from P.C.S. and B.A.S., R.D. undertook the field sampling and analysed the data, R.D., P.C.S. and B.A.S. interpreted and discussed the results and wrote the paper.

Additional Information

Competing financial interests: The authors declare no competing financial interests.

How to cite this article: Davies, R. *et al.* Low level off-road vehicle (ORV) traffic negatively impacts macroinvertebrate assemblages at sandy beaches in south-western Australia. *Sci. Rep.* **6**, 24899; doi: 10.1038/srep24899 (2016).



This work is licensed under a Creative Commons Attribution 4.0 International License. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in the credit line; if the material is not included under the Creative Commons license, users will need to obtain permission from the license holder to reproduce the material. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>

MARSHALL Janelle * OPRD

From: GAUTHIER Katie * OPRD
Sent: Monday, February 1, 2021 11:36 AM
To: PUBLICCOMMENT * OPRD
Subject: FW: Comment on proposed changes to Tillamook County beach driving

From: Nora Sherwood <nora@frii.com>
Sent: Monday, February 1, 2021 11:34 AM
To: GAUTHIER Katie * OPRD <Katie.Gauthier@oregon.gov>
Subject: Comment on proposed changes to Tillamook County beach driving

Jan. 31, 2021

Katie Gauthier

Legislative Coordinator

Oregon Department of Parks and Recreation Salem, OR 97306

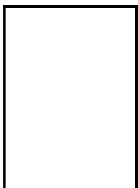
Ms. Gauthier:

I worked with a group of students at the St. James Santiago School in Lincoln City to create signage to help people understand what kinds of activities were threatening to the snowy plovers and other nesting shore birds. The experience helped me learn about the dangers that motorized vehicles could present to the nesting activities. We encourage the Oregon Parks and Recreation Department to make the seasonal restriction on beach driving effective year round.

Respectfully,
Nora Sherwood

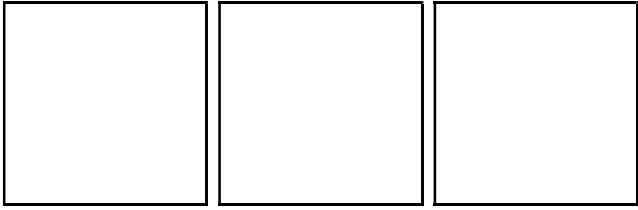
Member, Conservation Action Committee

Audubon Society of Lincoln City



Nora Sherwood
Science Illustration and Wildlife Art
Oregon Women-Owned & Emerging Small Business
Certified

A Lincoln City, OR
P 541-283-5949 **E** nora@frii.com
W <http://www.norasherwood.com>



MARSHALL Janelle * OPRD

From: Ray Monroe <doryfreshfish@embarqmail.com>
Sent: Monday, February 1, 2021 10:15 PM
To: PUBLICCOMMENT * OPRD
Cc: Craig Wenrick
Subject: Pacific City Dorymen's Association Beach Access Letter Attached
Attachments: PCDA Beach Access Letter Final.pdf



The Pacific City Dorymen's Association Inc.

Craig Wenrick

CO-CHAIR/Pacific City

Ray Monroe

CO-CHAIR/Pacific City

Melita Spath

SECRETARY/Cloverdale

Rob Royster

TREASURER/Pacific City

DIRECTORS

Shawn Farstad

Director/Hebo

Rob Kliever

Director/Pacific City

Tom Donohue

Director/Pacific City

Dave Larkins

Director/Pacific City

Randy Haltiner

Director/Pacific City

Steve Johnson

Director/Beaverton

Arica Sears

Director/Tierra Del Mar

Jeff Mollencop

Director/Pacific City

Tim Nelson

Director/Neskowin

Jerry Buxton

CO-FOUNDER

Paul Hanneman

CO-FOUNDER

February 1, 2021

Oregon Parks and Recreation Department,

Attn.: Katie Gauthier

725 Summer St NE, Suite C

Salem OR 97301

Re: Beach Access Points

Katie Gauthier,

The Pacific City Dorymen's Association is adamantly opposed to any beach access closures that inhibit or restrict long-established and customary uses by the Pacific City Dory Fleet. The traditional and historical uses are as follows.

- North and South of the Beach Access ramp at Cape Kiwanda should allow Boat launching, retrieving, and parking at all times. When it is necessary to launch and retrieve a boat south of the access ramp, parking is also required. *Exhibit 1 attached.*
- The Tierra Del Mar Access Point should remain open at the designated times to the mouth of Sandlake and Estuary. The area is used to harvest clams for crabbing and sand shrimp for fishing. This user group is already severely limited by area closure.
- Pacific City Turnaround access point should remain open to access the Beach and Mouth of the Nestucca River for Crabbing, Fishing, Clamming and Sand shrimp harvest.
- McPhillips Drive access point should remain open for user groups to enjoy all of a chosen activity.

A handwritten signature in blue ink, appearing to read 'Craig Wenrick'.

Co-Chair Craig Wenrick

A handwritten signature in blue ink, appearing to read 'Ray Monroe'.

Co-Chair Ray Monroe

The Pacific City Dorymen's Association Inc.

P.O. Box 728 Pacific City, OR 97135

A 501(c)(3) Nonprofit Corporation

EXHIBIT 1





MARSHALL Janelle * OPRD

From: J. E. Seibert <jseibert@willamette.edu>
Sent: Tuesday, February 2, 2021 9:37 AM
To: PUBLICCOMMENT * OPRD
Subject: Further limiting vehicles on beaches

I am writing in support of banning driving year-round from the mouth of Sand Lake south to the northern border of the Cape Kiwanda State Natural Area and for a quarter mile south of a Tillamook County boat ramp in Pacific City. A support the proposed ban to (1) protect shore birds, including the Snowy Plover, (2) to limit dangerous interactions between vehicles and walkers, and (2) for aesthetic reasons: I don't wish to look at or listen to vehicles when I've come to relax and enjoy ocean.

JoAnn Elizabeth Seibert
2245 Englewood Ave NE Salem OR 97301
503-315-8785
jseibert@willamette.edu

MARSHALL Janelle * OPRD

From: Ray Monroe <doryfreshfish@embarqmail.com>
Sent: Wednesday, February 3, 2021 9:46 AM
To: GAUTHIER Katie * OPRD; PUBLICCOMMENT * OPRD
Cc: Craig Wenrick
Subject: Ray Monroe Beach Access Letter
Attachments: Ray Monroe Beach Testimony.pdf

Katie, the letter attached is my personal opinion of the beach closure.

February 3, 2021

Oregon Parks and Recreation Department,
Attn.: Katie Gauthier
725 Summer St NE, Suite C
Salem OR 97301

Ray Monroe
PO Box 98
Pacific City, OR 97135

Re: Beach Access Points

Katie Gauthier,

First, the entire area north and south of the beach access ramp at Cape Kiwanda will need to be accessible for Boat launching, retrieving, and parking at all times. (photo attached)

When the beach erodes, we have utilized the entire area including the parking lot to facilitate the need of safe access to and from the ocean.

Second, I have been commercial and recreational fishing in a Dory off the beach at Cape Kiwanda, since I was 9 years old, that would be 54 years now. I have utilized the Pacific City Turnaround and the Tierra Del Mar access points to the beach in order to harvest clams, sandshrimp, crab and perch fish at the mouth of the Nestucca River and the Sandlake Estuary.

It was mentioned in the rules advisory committee that since the area north of Tierra Del Mar is closed most of the time, it would be easy to just close it all the time. On the contrary, access now has been severely reduced to natural resource users already. If it is closed nearly 90% of the time that would justify in my mind to at least keep it open 10% of the time for the people.

One person's experience should not be taken away to increase another's.

To Recap at this point. I am supporting or requesting status quo to the entire area being considered. It looks like to me someone is using the Dory Fleet to help their own agenda.

Thank You,
Ray Monroe
Pacific City Resident



MARSHALL Janelle * OPRD

From: GAUTHIER Katie * OPRD
Sent: Wednesday, February 3, 2021 3:53 PM
To: PUBLICCOMMENT * OPRD
Subject: FW: Mail
Attachments: 20210203160118741.pdf

From: PRICE Theresa * OPRD
Sent: Wednesday, February 3, 2021 3:51 PM
To: GAUTHIER Katie * OPRD <Katie.Gauthier@oregon.gov>
Subject: Mail

Hi Katie,

The attached letter came in the mail on Jan 22nd. I don't think I ever got it emailed to you, my apologies.

Thanks,
T



Theresa Price | Receptionist

Communications Division
Desk: 503.986.0758

January 15, 2021

I have lived in Pacific City for over 50 years. My house faces directly in front of the dune at the end of Pacific Ave., that is being considered for renewed vehicle access. I applaud the direction of the Oregon Parks to close Cape Kiwanda and Terra-del-Mar to vehicle traffic. But that is going to push all the vehicle traffic to the end of Pacific Ave (Turn-a-Round). Pacific City has changed and grown. Years ago, residents and visitors had beach designed vehicles that they primarily used in the off season to look for beach treasures. Now anyone who has a four-wheel drive thinks they can drive on the sand. That has increased the traffic on the beach a hundred-fold.

All the cars that once accessed the beach from these other two locations now will be driving and parking on the beach in this area. The past few years I have seen hundreds of cars each month attempt to drive over the dune onto the beach. Some make it some don't. Hundreds of families access this area to the beach and the dune gives no warning or indication of who coming up over the other side. Many of the drivers get their car stuck and have to dig it out or call for help. They need to accelerate to get over the top. I have seen so many near accidents.

The cars dig up the beach and drive to the mouth of the Nestucca. They speed by beach walkers and horse riders. They drive by children playing in the sand. The mouth of the river is one of the most pristine areas in South Tillamook County. There are seals sunning themselves along the bank. There are trails to explore along the river bank and a great place to sit on a driftwood log to enjoy the view.

You really have to live close to this area to fully understand the impact and danger this entails every day. Having the beach vehicle access closed this year has brought more and more people enjoying the beach from this area away from the crowds at Cape Kiwanda.

Sally Rissel



P.O. Box 396

Pacific City, Oregon 97135

Heronlanding123@gmail.com

MARSHALL Janelle * OPRD

From: Amy Williams <tcwakw@gmail.com>
Sent: Wednesday, February 3, 2021 4:01 PM
To: PUBLICCOMMENT * OPRD
Subject: In support of closing beach access / Tillamook Pacific City

Dear OPRD:

I am in favor of closing beach access to vehicles as proposed:

- 1.
2. Close the beach to vehicular access from the Hungry Harbor Boat Ramp south to the mouth of the Nestucca River. (It is important to note our Three Capes Organizing Committee based in Pacific City supports also closing Cape Kiwanda north to the mouth of Sand Lake.)
1. For the area north of the Hungry Harbor Boat Ramp to the foot of Cape Kiwanda, vehicle access shall be permitted for any recreational activity where use of a vehicle is required for the safety of the activity or the feasibility of the activity (launching or support of vessels boats).
3. Vehicle access shall be permitted for any recreational activity where use of a vehicle is required for the special needs of an individual or group (ex. ADA).

I only wish MORE beaches along the coastline were closed to vehicles.

While at Sand Lake one weekend, the cars were noisily competing for loudest music. Trash was everywhere. It seems as if people who park on beaches think they are in a parking outside an outdoor concert, and not on a pristine beach.

As a Lincoln City resident, I've seen near misses between children and vehicles on the beach, and I've seen numerous violations (cars on beaches where there is no legal access). I wish the vehicular beach access was closed at all Lincoln County points as well.

I don't understand the "thrill" of driving your car on to a beach. With ample nearby parking spaces available, walking to the beach with your family and friends seems so much more peaceful.

If people want to drive on sand, send them to Oregon Dunes.

Please close the beaches to vehicles.

Amy Williams

MARSHALL Janelle * OPRD

From: sean@basketcasewine.com
Sent: Thursday, February 4, 2021 2:15 PM
To: PUBLICCOMMENT * OPRD
Subject: rule change prohibiting parking on the beach in Pacific City south of the access ramp
Attachments: mt st helens.jpg; vintage beach parking.jpg

Good Afternoon,

My wife and I own a business in Pacific City and I would like to express my opinion on the potential rule change to prohibit parking on the beach in Pacific City.

Vehicle access to the beach at Cape Kiwanda is a tradition that predates even the Dory Fleet and has been going on since the first auto bridge was constructed across the Nestucca in the 1930's (see vintage photo attached). I have been talking to some of the old timers in town and this is only the second time they remember a suspension of parking on the beach. The first was after Mt. St. Helens erupted (see photo).

My friends and I like to take our families to the beach. It is an extremely enjoyable recreation for all of us, and it is much easier to manage the all the accoutrements that kids seem to need when you can park on the beach.

I agree that safety is an issue with parking on the beach. I just don't think permanently shutting it down is the right course of action.

I understand that reducing safety risk involves active management, and the solution to me seems to be implementing a fee structure to justify spending the money to make the area safe for all users. The state should implement a day use fee as they do in many other Oregon State Parks.

The proposed rule change is also inequitable. The proposed rule would allow vehicle access to the beach for recreational boaters but would disallow it for all other recreational users. Oregon has a long history of protecting equal access for all types of users, and this proposed rule runs afoul of that. It is inequitable to favor one class of user over all others.

Sincerely,

Sean Carlton
Twist Wine Company
Pacific City, OR



Virus-free. www.avg.com





MARSHALL Janelle * OPRD

From: J/K Myron <myrons@canby.com>
Sent: Friday, February 5, 2021 4:49 PM
To: PUBLICCOMMENT * OPRD
Subject: Beach Driving Restrictions in South Tillamook County
Attachments: Beach Driving Restrictions in South Tillamook CountyFeb.pdf

ATTN: KATIE GAUTHIER

Attached please find a pdf of my comments on vehicle restrictions on the beaches from the south side of Sand Lake Inlet to Pacific City. Thank you for this opportunity.

Kathleen Myron

Sent from [Mail](#) for Windows 10

ATTN: Katie Gauthier

Rule Title Amending 736-024-0015 Tillamook County Restrictions

“Restricts driving on beach from mouth of Sand Lake to Tierra Del Mar and parking on beach at Cape Kiwanda”

Appreciation

Thank you for the opportunity to comment on the proposed vehicle restrictions pertaining to the beaches from the mouth of Sand Lake south to south of Tierra Del Mar and at Cape Kiwanda parking on the beach.

Sand Lake to Cape Kiwanda

As one who has enjoyed walking the beaches from the mouth of Sand Lake (“the inlet”) to Cape Kiwanda; from Cape Kiwanda to near the “turnaround” just over the bridge in Pacific City; and the length of Straub State Park on the Nestucca sand spit, I am most gratified to read the proposals to restrict certain areas of these beaches. The Tierra Del Mar to Sand Lake Inlet beach is especially dear to me, not least because in the 1980s I was privileged to several times observe Snowy Plovers (nest with eggs and adult, young birds). I support the proposal to restrict traffic on this beach, both regular vehicle traffic and aircraft landings.

I am wondering if the aircraft definition includes motorized “wings” and other unique motorized flying vehicles? I am reasonably sure that these customized noisy small flyers would most likely disturb Snowy Plovers, and any other beach nesting birds, so hope they also are prohibited. I am also wondering if this rule text (1) amending 736-024-0015 will apply to drones? I am aware from the efforts to protect the water supply of Tierra Del Mar coming from US Forest Service-managed lands that the wooded lands to the East of Tierra Del Mar were found to provide active nesting sites for Marbled Murrelets. As I understand them, these fast-flying little birds forage at sea and return to their nests. I would hope that any and all flying “objects” will be restricted on the beaches south of the Sand Lake inlet (and at Sitka Sedge State Natural Area) to reduce the possibility of collisions in the air.

Less noise would be nice. In my experience, there is already more than tolerable noise pollution from the heavy vehicle use on the north side of the mouth of Sand Lake (a situation which I would definitely like to see revisited with the context of air, noise, and petroleum products pollution, not to mention the speeding traffic on Sand Lake Rd. and congested pollution traffic through the Coast Range!). And as at Cape Kiwanda, reducing vehicle use should also reduce petroleum and synthetic vehicle liquids pollution as well as a reduction in air pollution.

Cape Kiwanda South to Pacific Avenue at Pacific City (the "turnaround"?)

SAFETY-- I am especially pleased to note and support the restrictions to vehicles on the beach from the base of Cape Kiwanda south to Pacific Avenue at Pacific City. With friends and family, I was privileged to fish in dories launched off the beach at the Cape. I still remember close calls and other challenges in the beach area most used for dory launching and retrieval – from pedestrians, as well as, non-boat-related vehicles on the beach. Thank you for addressing this challenging safety issue. Limiting vehicle use to activities related to boat launchings and recovery, including transferring equipment, supplies, or catch to or from the boats should continue to support this unique activity of launching small boats through the surf. I'm wondering when this exciting activity of launching double-ender dories to fish first began?

Not only should this proposed restriction reduce the physical hazards of having many vehicles in an area frequented by pedestrians, but it should assist pedestrians (and "allowed" drivers) increased "line-of-sight" awareness of moving vehicles because there will not be long multiple lines of vehicles parked and obscuring those vehicles involved with the boats. Limited vehicles in a limited area strike me as a very wise restriction to enact. Thank you!

Commented [K1]:

BEACH ECOSYSTEM HEALTH vs. POLLUTION and DISTURBANCE – Another reason that fewer vehicles is wiser for these beaches has to do with the health and persistence of all the smaller life forms comprising the beach sands system. Not only should there be less garbage left behind from the crowds and their vehicles on the beach, but there should also be a significant reduction in the volume of vehicle petroleum and synthetic products leaking out onto the sands. In addition, there should be less air pollution from vehicle exhaust emissions (I understand that diesel particulate matter has been found to be carcinogenic), and less noise pollution. I am wondering if any research studies have ever been done of the effects of all the types of vehicle pollution on beaches?

As with no- or low-till gardening and farming to maintain the health and presence of soil microbes and other micro-organisms, less vehicle disturbance of the beach sands should allow for increased health and a more natural ebb and flow of organisms found in beach environments. I am wondering if any research studies have been done addressing the presence, numbers, inter-actions, and life needs of these organisms? I am wondering what roles healthy beaches fill in climate change? As with factoring in the wisdom of protecting the forests that provide the water that supplies potable water to beach communities, might it not be advisable to consider the health of the whole beach?

Again, thank you for this opportunity to support the proposed vehicle restrictions in South Tillamook County and to ask a few questions.

Kathleen Myron

myrons@canby.com

503.266.1263

MARSHALL Janelle * OPRD

From: Charlie Lunstedt <riverknute@yahoo.com>
Sent: Saturday, February 6, 2021 9:13 AM
To: PUBLICCOMMENT * OPRD
Subject: Re: purposed ban to drive on beach at Cape Kiwanda

Please DO NOT ban driving on the beach at Cape Kiwanda! This is our right set forth by the late Governor Tom McCall in signing the Beach Bill in 1967. Myself and many others are tired of losing access to places that belong to ALL! If I feel like driving an elder who is not able to walk on the beach it is our right. Where is your supporting data that specifically supports a legitimate reason for a beach ban? My family has lived on the Oregon Coast well over a 90 years and have seen many restrictions over the years. This latest proposal has to be one of the lamest to come forth yet. If your worried about the health of the beach environment, why don't you take a bag to the beach and pick up all the little chunks of plastic from Japan (from the last Tsunami)? Or better yet why not ban waves, or wind, as they cause a great deal of erosion. Maybe put up a wall along Highway 101 so motorist don't cause accidents by being distracted by the view of the Pacific Ocean. Get real people! Spend your time and budgets in a more constructive way!

Sincerely,
Charlie Lunstedt
P.O. Box 158
Lincoln City, Oregon
97367
541-921-2273
riverknute@yahoo.com

Sent from my iPhone

MARSHALL Janelle * OPRD

From: Stephen Lane <candlaneconcrete@gmail.com>
Sent: Saturday, February 6, 2021 9:23 AM
To: PUBLICCOMMENT * OPRD
Subject: Re: Drive on beach closer

My contact info if needed is
Stephen Lane
(541)992-4457
P.O. box 29
Otis, Or. 97368

Thanks for your time

On Sat, Feb 6, 2021, 9:20 AM Stephen Lane <candlaneconcrete@gmail.com> wrote:
To whom it may concern

I have lived on the beach since the early 90s. I have lots of elders, family members that are disabled and really just enjoy being able to park on beach.

Most of my family lives in Washington and Oregon and drive here to be able to park on the solid sand and use the power chairs or walkers to enjoy the coastline.

Closing the beaches to vehicles means the those with disabilities, elderly and injured people won't get to enjoy the coast.

Stairs to beach are great for young people. At the bottom of the stairs or ramp or even trails is soft sand that restricts who can enjoy the beach.

There isn't to many places to drive on to beach. Maybe better rules such as parking areas are for vehicles and not for setting up camp to hang out, For families that can physically navigate the beach should leave parking areas or park closer to the soft sand that really isn't used to park.

Parking fees to increase parking patrols and safety awareness would be a great way to help keep people safe and aware of rules. I believe there is a Oregon state parks permit sticker that could be required to park on the beach that we all ready have and could be required for those that want to park on the beach. Just like in the OHV areas. Simply won't cost the counties or state resources to require on vehicles.

Other than taking away more privilege's, I believe there are many that come to our smaller beach community's because they can park on beach. I believe closing the beach drive on areas would hurt the smaller community's.

Let's not take the easy route and close the parking areas but figure out how to maintain, patrol, and enforce safety for our friends, family and beach goers.

There is plenty of beach that vehicles aren't allowed and for those that feel that the vehicles are interfering with their beach experience can maybe not walk the beach in those spots, which are really a very small areas along the coastline.

Please keep us some luxuries of living on beach and near some of the most easy to navigate coastline and enjoy our outdoor experience on our beautiful Oregon coast. Please don't close these proposed areas, allow everyone to enjoy the coastline.

Thanks

Stephen and Mary Lane, family and many others

MARSHALL Janelle * OPRD

From: Ron Bourke <ronbourkefilms@hotmail.com>
Sent: Monday, February 8, 2021 9:09 AM
To: PUBLICCOMMENT * OPRD
Subject: Fwd: Reckless driving on Tierra Del Mar beach

The reckless driving on our family beach continues as evidenced by the donuts in the sand on Sunday February 7th. As a homeowner here I encourage you to ban all motor vehicles on this stretch of beach. I can see no value in continuing to allow this irresponsible behavior.



Ron Bourke
Portland, Oregon
+1 503 888 5386
ronbourkefilms.com

MARSHALL Janelle * OPRD

From: Mckenzye Anker <mack.anker@gmail.com>
Sent: Tuesday, February 9, 2021 6:39 AM
To: PUBLICCOMMENT * OPRD
Subject: Fwd: Tillamook County beach open access

----- Forwarded message -----

From: Mckenzye Anker <mack.anker@gmail.com>
Date: Tue, Feb 9, 2021 at 6:36 AM
Subject: Tillamook County beach open access
To: opro.publiccomment@oregon.gov <opro.publiccomment@oregon.gov>

Attn: Katie Gauthier

To Whom it may concern:

I just learned the news that an idea to close off beach access at Terra Del Mar to Sand Lake has been proposed and I am greatly concerned about this proposed idea! Being the wife of a dairy farmer in Tillamook and having no family in the area to help me raise my 4 young children. That beach access was the next best thing! I could safely take my kids out on the beach with all of their things park the car and pull down all the seats down and make a comfy place to take a nap! I didn't have to haul towels or our lunch and four young ones to find a place on the beach! Terra Del Mar has been the only place I could safely enjoy the beach with my kids alone if you take the ability for us to do that away you are taking away the only free thing for us and other families to do around here! If you have ever been a parent of young ones you know that they fight but it seems like as soon as we can taste that salty air and sand on our feet it is that mental break we all needed so badly! This little beach has made it worthwhile for us to live here with the conditions of rain and the scary new policies on drugs that have been recently passed! Other than being able to enjoy the beach and the rivers we really don't see much else to living here! Our dairy farm is here but we will gladly give that up for quality of life! From Covid restrictions to beach restrictions this mama of four is going to need some psychiatric help! Ha Please save this mama's peace of mind!

Thank you for your time!

McKenzye Anker

MARSHALL Janelle * OPRD

From: James <jamesdudder@gmail.com>
Sent: Tuesday, February 9, 2021 9:11 AM
To: PUBLICCOMMENT * OPRD
Subject: Tillamook beach closures

Hello,

I'm writing you today in opposition to any changes in the beach accessibility in South Tillamook county. Born in Oregon I have spent now 59 years enjoying and cherishing our beach access. I remember our family being able to take my great Grandmother, raised in Idaho, onto the beach in our VW bus to see the ocean for the first time. I spent a lifetime trying to live my life on the coast and now that I am here I can barely believe that this right of Oregonians is being threatened. I am frankly furious at the notion. It feels like the wealth inequality is attempting to gain a foothold on the rights of citizens. I'm sorry that beachfront homeowners and rental owners dislike cars on the beach-not.

The actions taken by our county commissioners I feel was ludicrous this spring. I personally protested the swarm of tourists invading us this spring even though my business is heavily tourist driven. I was happy for the parking lot closures at first hoping it would stop the influx. That did not work.

"This section of beach is normally open year-round, but in summer 2020 OPRD and the county temporarily closed it to vehicles, except boaters, amid state park staffing shortages and safety concerns related to mixing users on foot and vehicles."

By opening the parking lots and closing the beach a clusterfuck of parking issues and accidents happened as a result. It is not and will not be helpful to the people of the region, those of us that live here to change our access.

Getting stuck in the beach is a right of passage. People help each other, learn to be human or make human mistakes. Maybe they support our economy by hiring a tow. Please do not change our access. People come here because of beach access, I have all my life. Removing a Oregonian right like this is a thing the people should decide. If needed, put it to a Statewide vote.

In gentleness, humor, love and respect

James

MARSHALL Janelle * OPRD

From: Joseph Taylor <joseph_taylor@sfu.ca>
Sent: Wednesday, February 10, 2021 6:16 AM
To: PUBLICCOMMENT * OPRD
Subject: Comment on OAR 736-024-0015

Dear OPRD Review Committee,

I am writing in response to proposed rule change OAR 736-024-0015 regarding beach travel in southern Tillamook County. I know this area as a resident and a scholar. I first visited Pacific City in 1959. I was also a commercial doryman from 1977 to 1991 and a volunteer firefighter in Company 2 of the Nestucca Rural Fire Protection District from 1979 to 1991. Since 1989, I have been an academic historian specializing in the history of western North America and the environment. My most recent publication, *Persistent Callings: Seasons of Work and Identity on the Oregon Coast* (Corvallis 2019), traces the history of the Nestucca Valley; it is based on three decades of scholarly research. My remarks below thus reflect both personal experience and scholarly research on local history and its regional, national, and global contexts.

For as long as I can remember, people have driven the beach to the mouths of the Nestucca River and Sand Lake. Their purpose has been to collect wood and flotsam and to catch food. For many, they could only reach these destinations by vehicle because they lacked the wherewithal to afford boats or the physical ability to hike to distant points, especially while carrying clamming, crabbing, or fishing gear. This has been especially true of older residents. My great aunt drove these beaches from the 1930s to the 1970s. Her prey were the glass balls that floated ashore from Asia. When I accompanied her, I encountered a regular contingent of locals cruising the beaches, shovels and rods protruding from pickups and station wagons. Later, when I was researching the history of the Nestucca Valley, I learned that the poor and elderly still drive these beaches. Most will never admit it publicly, but fishing and gathering are crucial to their food security. I want to shine light on these people and their environmental relations because their access is affected by OAR 736-024-0015, which is cast as a safety measure but is really an aesthetic choice with racial, class, and ablest implications.

As I explain below, OAR 736-024-0015 will restrict access to two beaches, one a nearly two-mile stretch from Tierra del Mar north to Sand Lake, the other expanding an area closed (unduly in my view) from the Kiwanda ramp south to the Turnaround in Pacific City. Later I will add a second objection to the Kiwanda policy because of foreseeable impacts on dory fishers, but here I will note that OAR 736-024-0015's undue burdens on elderly, infirm, and subsistence fishers and gatherers contradict the spirit of the 1967 bill. In recommendation No. 5 of his 11 May 1967 letter, Governor Tom McCall informed the state legislature that he opposed "any amendment or language that would in any way adversely affect the public's legal and traditional rights to use of the beach areas." The present proposal and previous closures, in my opinion, violate the letter and spirit of this proviso, and the resulting equity imbalances seem actionable.

Oregon is deservedly admired for its beach laws, especially in contrast to coastal access policies in California and Washington state, but the goal of the 1913, 1967, and 1969 laws was to thwart de jure privatization. The state has been less vigilant regarding de facto exclusions, and policy developments over the last half century have enabled a creeping, quasi-enclosure of many Pacific beaches, including southern Tillamook County. In the 1980s, first seasonally and then full-year, the state closed vehicular traffic on the Pacific City beach between the Turnaround and one-quarter mile south of the ramp. For a century this had been the road to Cape Kiwanda. Then in 1957 traffic diverted to the county gravel road (paved in 1958), but beachgoers still drove the beach until dune formation and closure policies in the 1980s throttled access. Context is crucial to grasp the consequences of closure. This section of the Pacific City beach abuts two private developments: Kiwanda Shores and Shorepine. Both were gated at one time; one still is. Non-resident parking outside these developments is minimal, and pedestrian access to the beach is poorly signed and byzantine. The state's vehicle policies thus drastically reduced beach access while simultaneously concentrating users in crammed areas at

Cape Kiwanda and Bob Straub State Park. Meanwhile, usage of the closed beach narrowed to adjacent owners. It is not a de jure, owners-only desmaine, but that has been the de facto effect of vehicle closure.

Current conditions in Tierra del Mar resemble 1970s Pacific City. Its residential area is not gated, but roadside parking is minimal. Local parking is restricted to south of the houses or one mile north in a small area at Sitka Sedge State Natural Area, and Tierra del Mar residents are notoriously hostile to non-local traffic and pedestrians seeking the beach on road easements between houses. If the pattern at Kiwanda Shores and Shorepine holds, then OAR 736-024-0015 will significantly impair historical users. The beach north of the Tierra del Mar entrance will grow more exclusive. Beachfront property owners in Tierra del Mar and Pacific City will be enriched by unearned increments to their real estate holdings. Poor and non-ambulatory citizens will be further excluded.

The proposal now before the Oregon Parks and Recreation Department, first crafted by the unelected Tillamook Beach Driving Rule Advisory Committee, joins a long history of efforts to restrict beach access. Infamous battles in California at Malibu and Half Moon Bay, and in Washington and even Oregon illustrate the undying ambition to privatize Pacific beaches, but these crude efforts, mostly marked by the naked leveraging of wealth and political power, pale before a broader, subtler history of exclusion that strongly resembles the events in Tillamook County. Many American communities have asserted local custom, development priorities, and racial animus to exclude non-residents in Mississippi and across the South, in Connecticut, Illinois, Indiana, Michigan, New Jersey, and New York. Public access also shrank as property and ecological processes interacted to make beaches disappear. Cornelia Dean's [*Against the Tide*](#) demonstrates that this is a national trend. The upshot, and how this broader historical geography relates to OAR 736-024-0015, is that beach protection in whatever guise has harmed the poorest, least mobile citizens, and exclusions have not actually protected beaches. OAR 736-024-0015 is just another chapter in this sordid history. It is designed to enhance private property values at the expense of those least able to bear the costs: a fast track to gentrification built on bad precedents.

In addition to the equity implications of current and proposed vehicle restrictions north of Tierra Del Mar and the Turnaround in Pacific City, the proposed closure south of the Kiwanda ramp will create a practical imposition on the dory fleet. The Dory Association will likely comment as well, but experience and research show that if dory operations are confined to north of the Kiwanda ramp, then safety issues will eventually arise. OAR 736-024-0015 assumes that the beach is a static seascape; it is not. Sand and gravel bars form and disappear all the time. Dory operators adjust accordingly, altering where and how they launch and land. In my fishing experience, there were times from the 1970s to the 1990s when the safest landing and parking zones were at or south of the ramp. OAR 736-024-0015 does not anticipate these historical variations in beach conditions. At the very least, restrictions should be flexible enough to accommodate the dory fleet when the beach changes again, as it has historically since the first boats left the beach in the 1890s.

The wiser course, however, is to reject OAR 736-024-0015 in favor of the status quo, to revisit the wisdom of vehicle closures in general, and if safety is indeed a concern, then to lower the beach speed limit to 10 mph. Closures have biased against the poorest, least mobile members of society, and they have concentrated tourists onto ever smaller patches of sand, thus exacerbating ecological wear and tear.

- Joseph E. Taylor III.

Department of History

Simon Fraser University

<http://www.josephetaylor3.com>

[*Follow the Money: A Spatial History of In-Lieu Programs for Western Federal Lands*](#)

[*Persistent Callings: Seasons of Work and Identity on the Oregon Coast*](#) (2019)

MARSHALL Janelle * OPRD

From: GAUTHIER Katie * OPRD
Sent: Wednesday, February 10, 2021 7:46 AM
To: PUBLICCOMMENT * OPRD
Subject: FW: Comment on OAR 736-024-0015
Attachments: ORPD - 21.02.10.pdf

From: Joseph Taylor <joseph_taylor@sfu.ca>
Sent: Wednesday, February 10, 2021 6:16 AM
To: GAUTHIER Katie * OPRD <Katie.Gauthier@oregon.gov>
Subject: Comment on OAR 736-024-0015

Dear Ms. Gauthier,

Below are both an email (with embedded links) and pdf signed copy of my response to OAR 736-024-0015 proposal regarding driving on beaches in southern Tillamook County. I am submitting them as comment on the proposed rule changes.

- Joseph E. Taylor III
Home is in Portland, OR 97225
=====

Dear OPRD Review Committee,

I am writing in response to proposed rule change [OAR 736-024-0015](#) regarding beach travel in southern Tillamook County. I know this area as a resident and a scholar. I first visited Pacific City in 1959. I was also a commercial doryman from 1977 to 1991 and a volunteer firefighter in Company 2 of the Nestucca Rural Fire Protection District from 1979 to 1991. Since 1989, I have been an academic historian specializing in the history of western North America and the environment. My most recent publication, *Persistent Callings: Seasons of Work and Identity on the Oregon Coast* (Corvallis 2019), traces the history of the Nestucca Valley; it is based on three decades of scholarly research. My remarks below thus reflect both personal experience and scholarly research on local history and its regional, national, and global contexts.

For as long as I can remember, people have driven the beach to the mouths of the Nestucca River and Sand Lake. Their purpose has been to collect wood and flotsam and to catch food. For many, they could only reach these destinations by vehicle because they lacked the wherewithal to afford boats or the physical ability to hike to distant points, especially while carrying clamming, crabbing, or fishing gear. This has been especially true of older residents. My great aunt drove these beaches from the 1930s to the 1970s. Her prey were the glass balls that floated ashore from Asia. When I accompanied her, I encountered a regular contingent of locals cruising the beaches, shovels and rods protruding from pickups and station wagons. Later, when I was researching the history of the Nestucca Valley, I learned that the poor and elderly still drive these beaches. Most will never admit it publicly, but fishing and gathering are crucial to their food security. I want to shine light on these people and their environmental relations because their access is affected by OAR 736-024-0015, which is cast as a safety measure but is really an aesthetic choice with racial, class, and ablest implications.

As I explain below, OAR 736-024-0015 will restrict access to two beaches, one a nearly two-mile stretch from Tierra del Mar north to Sand Lake, the other expanding an area closed (unduly in my view) from the Kiwanda ramp south to the Turnaround in Pacific City. Later I will add a second objection to the Kiwanda policy because of foreseeable impacts on dory fishers, but here I will note that OAR 736-024-0015's undue burdens on elderly, infirm, and subsistence fishers and gatherers contradict the spirit of the [1967](#) bill. In recommendation No. 5 of his [11 May 1967 letter](#), Governor Tom McCall informed the state legislature that he opposed "any amendment or language that would in any way adversely affect the public's legal and traditional rights to use of the beach areas." The present proposal and previous closures, in my opinion, violate the letter and spirit of this proviso, and the resulting equity imbalances seem actionable.

Oregon is deservedly admired for its beach laws, especially in contrast to coastal access policies in California and Washington state, but the goal of the 1913, 1967, and [1969](#) laws was to thwart de jure privatization. The state has been less vigilant regarding de facto exclusions, and policy developments over the last half century have enabled a creeping, quasi-enclosure of many Pacific beaches, including southern Tillamook County. In the 1980s, first seasonally and then full-year, the state closed vehicular traffic on the Pacific City beach between the Turnaround and one-quarter mile south of the ramp. For a century this had been the road to Cape Kiwanda. Then in 1957 traffic diverted to the county gravel road (paved in 1958), but beachgoers still drove the beach until dune formation and closure policies in the 1980s throttled access. Context is crucial to grasp the consequences of closure. This section of the Pacific City beach abuts two private developments: Kiwanda Shores and Shorepine. Both were gated at one time; one still is. Non-resident parking outside these developments is minimal, and pedestrian access to the beach is poorly signed and byzantine. The state's vehicle policies thus drastically reduced beach access while simultaneously concentrating users in cramped areas at Cape Kiwanda and Bob Straub State Park. Meanwhile, usage of the closed beach narrowed to adjacent owners. It is not a de jure, owners-only desmaine, but that has been the de facto effect of vehicle closure.

Current conditions in Tierra del Mar resemble 1970s Pacific City. Its residential area is not gated, but roadside parking is minimal. Local parking is restricted to south of the houses or one mile north in a small area at Sitka Sedge State Natural Area, and Tierra del Mar residents are notoriously hostile to non-local traffic and pedestrians seeking the beach on road easements between houses. If the pattern at Kiwanda Shores and Shorepine holds, then OAR 736-024-0015 will significantly impair historical users. The beach north of the Tierra del Mar entrance will grow more exclusive. Beachfront property owners in Tierra del Mar and Pacific City will be enriched by unearned increments to their real estate holdings. Poor and non-ambulatory citizens will be further excluded.

The proposal now before the Oregon Parks and Recreation Department, first crafted by the unelected Tillamook Beach Driving Rule Advisory Committee, joins a long history of efforts to restrict beach access. Infamous battles in California at [Malibu](#) and [Half Moon Bay](#), and in [Washington](#) and even [Oregon](#) illustrate the undying ambition to privatize Pacific beaches, but these crude efforts, mostly marked by the naked leveraging of wealth and political power, pale before a broader, subtler history of exclusion that strongly resembles the events in Tillamook County. Many American communities have asserted [local custom](#), [development priorities](#), and racial animus to exclude non-residents in [Mississippi](#) and across [the South](#), in [Connecticut](#), [Illinois](#), [Indiana](#), [Michigan](#), [New Jersey](#), and [New York](#). Public access also shrank as [property](#) and [ecological processes interacted](#) to make beaches disappear. Cornelia Dean's [Against the Tide](#) demonstrates that this is a national trend. The upshot, and how this broader historical geography relates to OAR 736-024-0015, is that beach protection in whatever guise has harmed the poorest, least mobile citizens, and exclusions have not actually protected beaches. OAR 736-024-0015 is just another chapter in this sordid history. It is designed to enhance private property values at the expense of those least able to bear the costs: a fast track to gentrification built on bad precedents.

In addition to the equity implications of current and proposed vehicle restrictions north of Tierra Del Mar and the Turnaround in Pacific City, the proposed closure south of the Kiwanda ramp will create a practical imposition on the dory fleet. The Dory Association will likely comment as well, but experience and research show that if dory operations are confined to north of the Kiwanda ramp, then safety issues will eventually arise. OAR 736-024-0015 assumes that the beach is a static seascape; it is not. Sand and gravel bars form and disappear all the time. Dory operators adjust accordingly, altering where and how they launch and land. In my fishing experience, there were times from the 1970s to the 1990s when the safest landing and parking zones were at or south of the ramp. OAR 736-024-0015 does not

anticipate these historical variations in beach conditions. At the very least, restrictions should be flexible enough to accommodate the dory fleet when the beach changes again, as it has historically since the first boats left the beach in the 1890s.

The wiser course, however, is to reject OAR 736–024-0015 in favor of the status quo, to revisit the wisdom of vehicle closures in general, and if safety is indeed a concern, then to lower the beach speed limit to 10 mph. Closures have biased against the poorest, least mobile members of society, and they have concentrated tourists onto ever smaller patches of sand, thus exacerbating ecological wear and tear.

- Joseph E. Taylor III.

Department of History

Simon Fraser University

<http://www.josephetaylor3.com>

[Follow the Money: A Spatial History of In-Lieu Programs for Western Federal Lands](#)

[Persistent Callings: Seasons of Work and Identity on the Oregon Coast](#) (2019)

10 February 2021

Oregon Parks and Recreation Department
725 Summer Street NE, Suite C
Salem, OR 97301
Re: OAR 736-024-0015

I am writing in response to proposed rule change [OAR 736-024-0015](#) regarding beach travel in southern Tillamook County. I know this area as a resident and a scholar. I first visited Pacific City in 1959. I was also a commercial doryman from 1977 to 1991 and a volunteer firefighter in Company 2 of the Nestucca Rural Fire Protection District from 1979 to 1991. Since 1989, I have been an academic historian specializing in the history of western North America and the environment. My most recent publication, *Persistent Callings: Seasons of Work and Identity on the Oregon Coast* (Corvallis 2019), traces the history of the Nestucca Valley; it is based on three decades of scholarly research. My remarks below thus reflect both personal experience and scholarly research on local history and its regional, national, and global contexts.

For as long as I can remember, people have driven the beach to the mouths of the Nestucca River and Sand Lake. Their purpose has been to collect wood and flotsam and to catch food. For many, they could only reach these destinations by vehicle because they lacked the wherewithal to afford boats or the physical ability to hike to distant points, especially while carrying clamming, crabbing, or fishing gear. This has been especially true of older residents. My great aunt drove these beaches from the 1930s to the 1970s. Her prey were the glass balls that floated ashore from Asia. When I accompanied her, I encountered a regular contingent of locals cruising the beaches, shovels and rods protruding from pickups and station wagons. Later, when I was researching the history of the Nestucca Valley, I learned that the poor and elderly still drive these beaches. Most will never admit it publicly, but fishing and gathering are crucial to their food security. I want to shine light on these people and their environmental relations because their access is affected by OAR 736-024-0015, which is cast as a safety measure but is really an aesthetic choice with racial, class, and ability implications.

As I explain below, OAR 736-024-0015 will restrict access to two beaches, one a nearly two-mile stretch from Tierra del Mar north to Sand Lake, the other expanding an area closed (unduly in my view) from the Kiwanda ramp south to the Turnaround in Pacific City. Later I will add a second objection to the Kiwanda policy because of foreseeable impacts on dory fishers, but here I will note that OAR 736-024-0015's undue burdens on elderly, infirm, and subsistence fishers and gatherers contradict the spirit of the [1967](#) bill. In recommendation No. 5 of his [11 May 1967 letter](#), Governor Tom McCall informed the state legislature that he opposed "any amendment or language that would in any way adversely affect the public's legal and traditional rights to use of the beach areas." The present proposal and previous closures, in my opinion, violate the letter and spirit of this proviso, and the resulting equity imbalances seem actionable.

Oregon is deservedly admired for its beach laws, especially in contrast to coastal access policies in California and Washington state, but the goal of the 1913, 1967, and [1969](#) laws was to thwart de jure privatization. The state has been less vigilant regarding de facto exclusions, and policy developments over the last half century have enabled a creeping, quasi-enclosure of many Pacific beaches, including southern Tillamook County. In the 1980s, first seasonally and then

full-year, the state closed vehicular traffic on the Pacific City beach between the Turnaround and one-quarter mile south of the ramp. For a century this had been the road to Cape Kiwanda. Then in 1957 traffic diverted to the county gravel road (paved in 1958), but beachgoers still drove the beach until dune formation and closure policies in the 1980s throttled access. Context is crucial to grasp the consequences of closure. This section of the Pacific City beach abuts two private developments: Kiwanda Shores and Shorepine. Both were gated at one time; one still is. Non-resident parking outside these developments is minimal, and pedestrian access to the beach is poorly signed and byzantine. The state's vehicle policies thus drastically reduced beach access while simultaneously concentrating users in crammed areas at Cape Kiwanda and Bob Straub State Park. Meanwhile, usage of the closed beach narrowed to adjacent owners. It is not a *de jure*, owners-only desmaine, but that has been the *de facto* effect of vehicle closure.

Current conditions in Tierra del Mar resemble 1970s Pacific City. Its residential area is not gated, but roadside parking is minimal. Local parking is restricted to south of the houses or one mile north in a small area at Sitka Sedge State Natural Area, and Tierra del Mar residents are notoriously hostile to non-local traffic and pedestrians seeking the beach on road easements between houses. If the pattern at Kiwanda Shores and Shorepine holds, then OAR 736-024-0015 will significantly impair historical users. The beach north of the Tierra del Mar entrance will grow more exclusive. Beachfront property owners in Tierra del Mar and Pacific City will be enriched by unearned increments to their real estate holdings. Poor and non-ambulatory citizens will be further excluded.

The proposal now before the Oregon Parks and Recreation Department, first crafted by the unelected Tillamook Beach Driving Rule Advisory Committee, joins a long history of efforts to restrict beach access. Infamous battles in California at [Malibu](#) and [Half Moon Bay](#), and in [Washington](#) and even [Oregon](#) illustrate the undying ambition to privatize Pacific beaches, but these crude efforts, mostly marked by the naked leveraging of wealth and political power, pale before a broader, subtler history of exclusion that strongly resembles the events in Tillamook County. Many American communities have asserted [local custom](#), [development priorities](#), and racial animus to exclude non-residents in [Mississippi](#) and across [the South](#), in [Connecticut](#), [Illinois](#), [Indiana](#), [Michigan](#), [New Jersey](#), and [New York](#). Public access also shrank as [property](#) and [ecological processes interacted](#) to make beaches disappear. Cornelia Dean's [Against the Tide](#) demonstrates that this is a national trend. The upshot, and how this broader historical geography relates to OAR 736-024-0015, is that beach protection in whatever guise has harmed the poorest, least mobile citizens, and exclusions have not actually protected beaches. OAR 736-024-0015 is just another chapter in this sordid history. It is designed to enhance private property values at the expense of those least able to bear the costs: a fast track to gentrification built on bad precedents.

In addition to the equity implications of current and proposed vehicle restrictions north of Tierra Del Mar and the Turnaround in Pacific City, the proposed closure south of the Kiwanda ramp will create a practical imposition on the dory fleet. The Dory Association will likely comment as well, but experience and research show that if dory operations are confined to north of the Kiwanda ramp, then safety issues will eventually arise. OAR 736-024-0015 assumes that the beach is a static seascape; it is not. Sand and gravel bars form and disappear all the time. Dory operators adjust accordingly, altering where and how they launch and land. In my fishing experience, there were times from the 1970s to the 1990s when the safest landing and parking zones were at or south of the ramp. OAR 736-024-0015 does not anticipate these historical variations in beach conditions. At the very least, restrictions should be flexible enough to

accommodate the dory fleet when the beach changes again, as it has historically since the first boats left the beach in the 1890s.

The wiser course, however, is to reject OAR 736-024-0015 in favor of the status quo, to revisit the wisdom of vehicle closures in general, and if safety is indeed a concern, then to lower the beach speed limit to 10 mph. Closures have biased against the poorest, least mobile members of society, and they have concentrated tourists onto ever smaller patches of sand, thus exacerbating ecological wear and tear.

A handwritten signature in black ink, appearing to read 'J. E. Taylor III', with a stylized flourish at the end.

Joseph E. Taylor III
Department of History
Simon Fraser University
8888 University Drive
Burnaby, BC V5A 1S6 CANADA

MARSHALL Janelle * OPRD

From: Robin Anderson <keepers4u@gmail.com>
Sent: Wednesday, February 10, 2021 8:35 PM
To: PUBLICCOMMENT * OPRD
Subject: Vehicular Restriction on beach in Pacific City

To Whom It May Concern:

We have been a property owner in Pacific City since 2011 and visitors there for a decade before that. It is a wonderful, scenic place to spend time with our family.

We enjoy the annual Dory Days celebration, watching the Dory boats and surfers and walking the beach. We have participated in the SOLV beach clean up several times.

We have been dismayed in recent years by the presence of multitudes of vehicles on the beach and the litter and destruction of the dunes by visitors who don't seem to give a damn about the environment. We witnessed someone trying to drive a vehicle up the north side of the Cape Kiwanda dune at one point (fortunately a Park Ranger showed up to "encourage" them to leave).

The recent closure of the PC beach to vehicles other than for the Dory fisherfolk has restored our enjoyment of the area. Please make it permanent.

Thank you for your consideration,

Robin D Anderson & Laurence M Binder

--

MARSHALL Janelle * OPRD

From: Barbara Baltzell <bbaltz4127@aol.com>
Sent: Thursday, February 11, 2021 10:23 AM
To: PUBLICCOMMENT * OPRD
Subject: Private Driving on the beach.

I want the state my disapproval of restricting private driving on the beach.

My family (and later myself) have been going to Pacific City since the 1940's. My grandfather bought a cabin in Tierra Del Mar in 1962 - which our family still owns. My husband and I own a beachfront home on Sunset in Pacific City.

We are not newcomers. I have walked with my dogs and played on those beaches through the years with not so much as a close call with drivers on the beach.

In 1913, Oswald West designated all Oregon beaches as public highways to the wet sand line. In 1967, Tom McCall enlarged upon that by declaring all of the beach as public state highway.

Please do not negate the laws that previous governors have fought to enact!!!

Barbara and Dennis Baltzell
Owners of 35250 Sunset.

Sent from my iPhone

MARSHALL Janelle * OPRD

From: Dirk Conradie <dirkconradie@yahoo.com>
Sent: Thursday, February 11, 2021 10:27 AM
To: PUBLICCOMMENT * OPRD
Subject: Please ban driving on Tillamook beaches

Request to permanently ban driving on Tillamook beaches

Our family have been coming to Pacific City for more than ten years and it has become our favorite place. Our only complaint over the years has been about cars and driving on the beach. During the pandemic we have experienced the beach without cars and it has been nothing short of amazing. We have seen families on the beach, little kids running around and more people walking and enjoying nature than ever before. We have also experienced more birds and wildlife than ever before. There are no ruts on the sand, no car tracks through the dunes and walking on the beach feels safe again. Somehow people found a place to park, dori boats have been extra careful and the quality of the beach experience has increased significantly.

Before the restrictions we have had numerous occasions of cars driving very close to us at high speed. We have felt unsafe walking and enjoying the waves and the beach. Over weekends it had become similar to walking in the middle of the road, you always have to be on the lookout for cars. While some drivers have been considerate of pedestrians on the beach, others drive at high speed close to pedestrians without regard to their safety and/or enjoyment of the beach. There are no police to enforce reasonable speed limits, no rules as to how close to people, dogs, horses and children they can drive and no one to stop drivers from driving in the dunes.

At the turnaround we have seen many close calls where cars have to get a lot of speed to go over the dune. When coming over the dune there is a blind spot and it creates a very dangerous situation. It is rare to see a driver going slow over this dune, since the sand is deep and drivers feel like they need speed to get to the hard sand. We avoid this area due to the dangerous conditions for walking. Since the pandemic we have noticed families returning, umbrellas on the beach, kites in the air and all of the things we traditionally expect to see when going to the beach. People have started using Bob Straub more and running and walking on the beach has become popular again. More people are able to enjoy the beach since driving has been banned.

When parking was allowed on the main beach, it became a parking lot during the summer. We saw kids making sand castles and running around in this parking lot. People trying to navigate cars and parents worried about cars and kids. We have seen numerous close calls as inexperienced drivers try to navigate the sand and people. Cars on the beach significantly take away from the peaceful experience and enjoyment.

As far as I can tell there is no purpose for driving on the beach other than the "fun" of doing so. While I can understand driving to launch a fishing vessel as long as there is adequate safety measures, driving for fun comes at a very high cost. There are significantly more people walking, fishing, playing with their kids, enjoying the silence, swimming and playing on the beach now that it is safe to do so. You can see this in other Oregon beach towns such as Cannon beach, Manzanita, and more. These towns have created safe beaches and even have access for disabled people with beach wheel chairs. For those of us that want to drive for fun, sand lake recreational area is nearby.

Cars and beaches full of people do not mix. Pacific city is no longer a remote quiet fishing village with no tourists and times have changed. It is time to permanently ban driving and parking on the beach.

Thank you for your consideration

Dirk Conradie
503.201.5246
35830 Sunset dr
Cloverdale Or 97112

MARSHALL Janelle * OPRD

From: Gus Meyer <gusmeyer9@gmail.com>
Sent: Thursday, February 11, 2021 12:37 PM
To: PUBLICCOMMENT * OPRD
Subject: PROPOSED BEACH ACCESS RULE RESPONSE

Attention: Katie Gauthier

Oregon's Beautiful Beach Access**Provisioning:**

- By Oregon Beach Law
- Tourism Beach Attraction
 - Through Promotion
 - By Cultural Survey and Research
 - For Recreational Exploitation of many desires
 - By Travel Promotion
 - Nationwide to some international travelers
- Equal Opportunity for ADA Disabled Persons
- Beachcombing
- For Physical and Mental Health Outlets
- Family Togetherness – Young, Intermediate, and Elderly
 - A highly desirous enterprise in Tillamook County

Tillamook County Beach Accessibility:

- Limited Open Beach Access by vehicle or in person –By County and State
- Expanding Urban Visitation Requirements
- Zealous Locals of Impact(s) Real or Perceived
- Established Regulated Beach Environmental Access

Tillamook County Beneficences:

- Enhances County Short Term Rental Taxation Revenues
- Encourages County Short Term Rental Investing in Upper Cast Home Building – as far as from North Carolina
- Existing Summer Homes Revenue Earning Potential
- Contributes to General Revenue Taxation
- Offers Hospitality, General Merchandise, and Small Business an Income of Essence

- Adjusts Transportation Tax Revenues upward for county

Tillamook County Experiences:

- Overwhelmed by Demand, Visitor Expectations, and Recreational Users
- Local Limited Adaptation Acceptance
- The Northwest Oregon Popularity Exploitation
- Affects Ocean Livelihoods; such as Dory Men
- Local Standard of Livability – Frustration and even Angst
- A new rule could impact dory men’s access up and down Oregon’s coast.
- A new rule could impact other state beach accesses with or without transparency.
- A new rule as supposed will drive opposition to river gravel bars access in the near future.

Recommendations:

1. Maintain Current Beach Accesses
2. Expand State Park and County Park Beach Access Accommodations
 - a. Beach Day Use accommodations at Nehalem State Bay Park, Cape Lookout State Park, Earl Straub State Park - all including parking facilities.
 - b. Provide for Tillamook County Beach Day Use Accommodations and Parking – such as expand Bay Ocean Spit Ocean and Bay Beach Day Use.
3. Address the “ground level frustrations” on all sides with day use beach parking enhancements.
4. Additional Promotion of Safety First protocols.
5. The big local JOKE – lock up SR 06, SR 22, and SR 18 on week ends
6. Expanding thusly will diversify Oregon’s beachgoers and distribute perceived environmental impacts.
7. This presents some beach management by state and county.

Quick Overview - The Total Story:

I visited Bay Ocean Spit today – a chilly sunny Wednesday day and there were 23 cars in the parking lot with two more vehicles coming in and one horse trailer. During the January 11-13 high tides I again visited the Bay Ocean Spit parking lot and there were 6 vehicles in the parking lot on a nasty weather day.

At last week’s County Road Advisory Meeting once again a member brought up residential dissatisfactions this time of year with parking at Cape Meares Ocean Access, knowing it will soon become total local frustration, angst, and visitor frustration.

OPRD and Tillamook County executives are previously fully aware of the Recreational users parking frustrations and safety issues at Ecola West State Park on US 101 highway.

The parking frustrations in Pacific City and Manzanita areas take toll on all, including transportation movement.

It just goes on and on. Taxpayers rigorously voted in STR and Tourism Promotion to satisfy rural, urban and tourism as foreseen, supported by revenue generation.

- **Oregon's Beaches are uplander Charma.**
- **Oregon's Beaches implode Ocean and Forest combined beauty with environmental dignity.**
- **Oregon's Beaches are Awesome.**

Now it's up to all to support these beloved beach requirements in warp speed.

Respectfully:

A D. "Gus" Meyer

1715 Skyline Drive, Tillamook, Oregon, 97141

MARSHALL Janelle * OPRD

From: Jon Norstog <muttonmaster7@gmail.com>
Sent: Thursday, February 11, 2021 12:56 PM
To: PUBLICCOMMENT * OPRD
Subject: Proposed rule change regarding motor vehicles on certain Oregon beaches

To Oregon parks & Recreation:

I strongly support the proposed closure of public beaches, including from the tip of the Sand Lake spit to the southern edge of Tierra del Mar, and from the ramp near Cape Kiwanda (Hungry Harbor Rd.) south a quarter of a mile (aside from dory boat loading and unloading). I am a swimmer, beachgoer and clammer. I like to take my grandchildren to the beach. I see no need to drive on the beach at all - well Daytona Beach might be the exception but that one is not in Oregon.

Sincerely

Jon Norstog
6918 NE Wygant St.
Portland OR 97218

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 2:02 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Ciel
Last Name	Liningier
Email	Ciel.liningier@gmail.com
Public Comment	Protect our beaches and keep cars off.

Submission ID: a18bae6d-8faa-4aa5-8d64-0410367285f5

Record ID: 777

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 1:28 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Virginia
Last Name	LaFave
Email	lafave6869@comcast.net
Public Comment	<p>To the Commission, My husband & I bought recreational property near Hebo some 45 years ago. We enjoyed countless trips to Pacific City and to the beach south of Tierra Del Mar. It was absolutely beautiful and peaceful. The last few years with vehicles driving on the beach has ruined this beauty and peace. It is now beset with the noise of 4-wheelers, jet skis and human waste on the grassy shore. It is no longer an attractive area to visit. It is a shame! Please do not allow this to continue. Ban driving on the beach and allow the beach to return to it's natural beauty and calm. Thank you. Sincerely, Virginia and Daniel LaFave virginia</p>

Submission ID: 9a8d6fa8-50ac-4fdf-b2b4-2916e26df7f7

Record ID: 775

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 12:35 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	John
Last Name	Frailing
Email	J.frailing@sbcglobal.net
Public Comment	<p>Our house is on Sunset Drive. We walk the beaches from there, over the cape to Tierra, and south to the Jaws. It has been great to have significantly less trash and a more serene walk, without vehicle noise, going to the jaws. Also, for some reason on the beach west of our house, it appears to be a great place for folks to spin donuts. Not good for dogs, kids or folks seeking some beach serenity. That area should also be seriously considered for the restriction of vehicle traffic. The area north of the cape still allows cars. I cannot imagine why, since there is easy access by foot to the beaches south of Tierra, even access for those who are disabled. The last time i hiked it, i was still picking up trash. The gliders were on the cape and had all walked to the launch area. They are a hardy group, and seem to function fine without a car to take their rigs to the cape.</p>

Submission ID: eea6bb2-413d-4bd2-bc25-667d3f8ca34b

Record ID: 774

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 10:42 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Ron
Last Name	Olson
Email	r.olson@msn.com
Public Comment	<p>Dear Members, As a property owner in Pacific City for over twenty-five years and having been a Los Angeles County Lifeguard I feel compelled to comment on this proposed vehicle restriction in South Tillamook County. Like many others I feel the only reason to have vehicles on the beach is for emergencies and for dory drop off and pickup and perhaps for drop off and pickup of people with disabilities. Other than that they are a safety threat for people on the beach. It is just a matter of time till someone gets hurt by being struck by a vehicle and for sure there will be an expensive law suit that will follow. In years past when there weren't many folks on the beach it wasn't a problem, but now on any summer day it looks like most Southern California beaches and it just makes no sense to allow it. That alone should suffice without even bringing the protentional environmental pollution issues into it. Thanks for your time, Ron Olson</p>

Submission ID: d8e84790-cfea-4b01-afe8-e82678eb2e01

Record ID: 773

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 10:02 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Ryan
Last Name	Cruse
Email	rcruse@gmail.com
Public Comment	Although I've personally enjoying the driving on the beach access for years, things have obviously gotten out of hand with the increased pressure and so I am in full support of shutting down beach driving access as outlined in this proposal. HOWEVER, I am not in support of charging \$10/day for parking as this only serves to reduce fair and equitable access for all. The parking fee won't actually reduce the problems with over congestion, parking along the road, safety concerns, etc. It will just ensure that those who are able to access the beach have more money than those who aren't. I suggest that the State and County look at Travel Oregon's budget if you are needing money to deal with infrastructure challenges.

Submission ID: a525aa3c-e295-468b-81c8-52818ddd30c8

Record ID: 772

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 9:51 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Richard
Last Name	Powers
Email	Power3960@hotmail.com
Public Comment	I am opposed beach driving. I believe having vehicles on the beach creates a hazardous condition where people on the beach could potentially be injured. While most people are driving safely, I've seen many cars and trucks come very close to hitting people as they drive onto and leaving the beach area. When leaving the beach, the driver may also be impaired by alcohol creating an even more dangerous situation. Thank you for allowing me to comment on this topic.

Submission ID: db9e0aa3-ab7f-4912-837f-c7e7ee992b54

Record ID: 771

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 8:08 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Mark
Last Name	Tilton
Email	Mtcoast@outlook.com
Public Comment	I strongly support this proposal to restrict vehicles on the beach. I also support the concerns and proposed actions already submitted by the Surfrider organization. I feel a similar ban makes sense in the Florence area on the beach from the South Jetty and going southward to some point adjacent to the Dunes NRA where ATVs already have access to the foredunes. Sincerely, Mark Tilton Florence, Oregon

Submission ID: a17300c0-5a51-4926-a944-fdb88c577f1b

Record ID: 770

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 10, 2021 2:13 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Kris
Last Name	Fowler
Email	Ridefruita@yahoo.com
Public Comment	Keep the beaches open. It is of utmost importance to keep the beaches open for all. I am against closing vehicle access.

Submission ID: f28abf3d-3ea4-4c39-8baa-d93e7e5b1a29

Record ID: 769

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 10, 2021 2:13 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Kris
Last Name	Fowler
Email	Ridefruita@yahoo.com
Public Comment	Keep the beaches open. It is of utmost importance to keep the beaches open for all. I am against closing vehicle access.

Submission ID: e98532e7-c49e-414d-b0b3-33c576dcc768

Record ID: 768

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 10, 2021 2:07 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Corinne
Last Name	Lininger
Email	Corylininger@gmail.com
Public Comment	I support the recommendations to prohibit driving year round. I also support the reevaluation of the fee-based access to allow anyone regardless of economic situation to access the beach. Sincerely, Corinne

Submission ID: ea30fba5-18e9-4533-9c0e-30ea425f1292

Record ID: 767

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 10, 2021 1:55 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Adam
Last Name	Shaleen
Email	adamshaleen@gmail.com
Public Comment	Get vehicles off the beach, please. Oregonians deserve to enjoy the beach with their families without fear of being run over by some truck.

Submission ID: 3a7183be-0e12-4ff6-9800-eb49cb98145

Record ID: 766

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 10, 2021 9:30 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Daniel
Last Name	Sanchez
Email	d.grimaldo88@gmail.com
Public Comment	I hope this is just temporary. I think a lot of families enjoyed driving in the beach and just enjoy the day, not going back and forth to your car.

Submission ID: 25328b55-3b08-4f55-858a-82dd5863031b

Record ID: 765

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Tuesday, February 9, 2021 8:04 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Amy
Last Name	Ellingson
Email	Amyellingson44@gmail.com
Public Comment	I support stopping all driving on these beaches, and all Oregon beaches. Thank you.

Submission ID: dacce8e7-9121-428f-af9e-baf56c40d3a2

Record ID: 764

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Tuesday, February 9, 2021 8:01 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Karen
Last Name	Hughes
Email	khome.hughes@gmail.com
Public Comment	Please close these beaches and all of the Oregon coastline to motorized vehicles for it's health and well being.

Submission ID: 3a9a21df-d531-4bd0-8ce9-ee35e6580d1a

Record ID: 763

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Tuesday, February 9, 2021 4:08 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Nick
Last Name	Decker
Email	ifrviper@gmail.com
Public Comment	Leave the beaches open to drive on !! The taxpayers own the beaches not the rich that want it too themselves!!

Submission ID: 89151686-c2d2-429e-94c5-5bbf5d6698a2

Record ID: 762

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Tuesday, February 9, 2021 8:08 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Janet
Last Name	Spalding
Email	Jan@spaldingshome.com
Public Comment	<p>I write today encouraging permanent closure of driving on the beach in front of Tierra del Mar north to Sandlake inlet, permanently. I am a home owner in Tierra del Mar since 2000 and have visited and rented there for 15 years before that. Over the years I have witnessed erratic and dangerous driving on this area of the beach. I recall one event clearly where a toddler with an older sibling were almost hit by a vehicle speeding down the beach. They were seated on the sand playing as many of us watched the vehicle speed towards them, not appearing to see them in the sunshine. A number of adults ran to the beach and stopped the vehicle. It appeared alcohol was involved. This is NOT the only time I have witnessed such close encounters. It is only a matter of time before someone is killed. Please protect the public from this danger.</p>

Submission ID: e207358a-f9f8-4ca9-8966-d288d81d1fef

Record ID: 761

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Monday, February 8, 2021 11:07 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Susan
Last Name	Gallagher
Email	smgalla@hotmail.com
Public Comment	In my humble opinion I believe it's a grand idea to restrict driving in that area of the beach. I don't believe it's too much to ask to restrict just a quarter of a mile.

Submission ID: 7e2823d1-cecb-42be-ae8e-e945f0612019

Record ID: 760

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Monday, February 8, 2021 4:15 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Gloria
Last Name	Vandehey
Email	Gloria.B.Vandehey@gmail.com
Public Comment	I ask to restrict beach driving in each case, and also along the McPhillips beach, based on the natural beauty and sustainability of natural resources. Any Oregonian or visitor to the area can walk on the beaches to enjoy the unspoiled beauty and wildlife, particularly bald eagles nesting in the area. It seems to be counter productive to welcome beach driving when the State Parks make an effort to deter overnight camping. Illegal Camping within Cape KIWANDA Natural area is frequent, and leads to trash, beach fires and use of the park as a bathroom since no restroom nor trash pickup facilities exist.

Submission ID: e5c37f94-2f67-4556-9b25-822aa07e6ab6

Record ID: 759

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, February 6, 2021 11:35 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Charlie
Last Name	Lunstedt
Email	riverknute@yahoo.com
Public Comment	Please DO NOT ban driving on the beach at Cape Kiwanda! This is our right set forth by the late Governor Tom McCall in signing the Beach Bill in 1967. Myself and many others are tired of losing access to places that belong to ALL! If I feel like driving an elder who is not able to walk on the beach it is our right. Where is your supporting data that specifically supports a legitimate reason for a beach ban? My family has lived on the Oregon Coast well over a 90 years and have seen many restrictions over the years. This latest proposal has to be one of the lamest to come forth yet. If your worried about the health of the beach environment, why don't you take a bag to the beach and pick up all the little chunks of plastic from Japan (from the last Tsunami)? Or better yet why not ban waves, or wind, as they cause a great deal of erosion. Maybe put up a wall along Highway 101 so motorist don't cause accidents by being distracted by the view of the Pacific Ocean. Get real people! Spend your time and budgets in a more constructive way! Sincerely, Charlie Lunstedt Lincoln City, Or

Submission ID: 68334104-db57-4738-93ef-b5088abafffb

Record ID: 757

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, February 6, 2021 8:45 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	James
Last Name	Sweitz
Email	jrsweitz@yahoo.com
Public Comment	We like the freedom of driving on the beach.its the only spot on coast you can do it.

Submission ID: f6a7961b-2ed5-4d18-b9f5-0246f6853b74

Record ID: 756

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 4, 2021 10:08 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Lynne
Last Name	Warwick
Email	Lynnekern21@gmail.com
Public Comment	<p>I am for closing the proposed beaches to vehicle access, however I support Surfrider's proposed changes as well: Close the beach to vehicular access from the Hungry Harbor Boat Ramp south to the mouth of the Nestucca River. (It is important to note our Three Capes Organizing Committee based in Pacific City supports also closing Cape Kiwanda north to the mouth of Sand Lake.) For the area north of the Hungry Harbor Boat Ramp to the foot of Cape Kiwanda, vehicle access shall be permitted for any recreational activity where use of a vehicle is required for the safety of the activity or the feasibility of the activity (launching or support of vessels boats). Vehicle access shall be permitted for any recreational activity where use of a vehicle is required for the special needs of an individual or group (ex. ADA). We also request that OPRD work with Tillamook County to revise their fee schedule and ensure all Oregonians and visitors have access to the beach in Pacific City, regardless of their economic status, once free parking on the beach is closed.</p>

Submission ID: 1e8317ea-8408-4b24-92d5-d13d66c7fd51

Record ID: 755

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 4, 2021 6:50 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Ammon
Last Name	Bonham
Email	ammon50@hotmail.com
Public Comment	Please stop using the beach as a parking lot. If you need a parking lot, make a parking lot. Maybe make a new parking lot over the existing parking lot. Tons of options. Also, please remove the fee. It's un-Oregonian. If you need more money, start charging fees to richie riches getting beer at the Pelican. Maybe tax that shower they provide. Maybe tax the condos harder for ruining what use to be a nice place. Thanks, Ammon

Submission ID: ccf59ae5-e80a-4a85-8e04-1bd1a90f0e6e

Record ID: 754

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 4, 2021 9:18 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Jacki
Last Name	Richer
Email	Jackiricher784@gmail.com
Public Comment	I am in favor of the proposed changes. Having cars on the beach is dangerous for children and dogs off leash. The new \$10 fee concerns me - i understand the need but am concerned about everyone not having beach access. If people are paying to visit they would probably stay all day which would also limit parking for those of us who want to stop by. To summarize I am in favor of the new laws banning cars on the beach but I am concerned by the outcome of enforcing a day use fee. Thank you.

Submission ID: 49a4e5cb-6e54-4627-972c-14e5169e3c18

Record ID: 753

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 4, 2021 8:44 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Scott
Last Name	Jerger
Email	Scottjerger@gmail.com
Public Comment	Please eliminate driving on the beach at pacific city except for the Dories.

Submission ID: 3702b199-d4ff-445c-971f-d7634db48f2e

Record ID: 752

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 3, 2021 9:51 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Skylaar
Last Name	Amann
Email	Skyamann@gmail.com
Public Comment	Please prohibit driving on the beach permanently. It's destructive to wildlife and habitats of both the sea and shore and it's dangerous for kids and adults. Vehicles also lead to pollution such as gas leakage. There are also studies about how chemicals from tires sicken salmon. Oregon should be a leader in environmental stewardship and make this change. I grew up in Lincoln County and benefited from car-free beaches which enriched my education and recreation opportunities. Please prohibit vehicles on the beach. Paying for parking is a small price to pay to keep Oregon's beaches and wildlife healthy.

Submission ID: cccd9642-3f05-4d20-8839-1947a1571fa4

Record ID: 751

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 3, 2021 6:43 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Alexandra
Last Name	Peters
Email	Aplloren@gmail.com
Public Comment	<p>I previously commented to express that I believe recreational driving should no longer be allowed at cape kiwnda beaches for the reasons of safety, interference with local businesses (ie dory boats), and environmental impact. I additionally want to add that the parking fee is needed and beyond reasonable. When people commit to trek to the coast the commit to spend on gas, the car that gets them there, and a variety of expenses along the way. Paying for parking that can provide safety, garbage services, and restroom facilities is beyond reasonable and many visitors expect to do so. 10\$ is a small fee for someone to enjoy nature and help ensure the community supporting their vacation can sustain the load. Of course I believe locals should have a seasonal pass option. And even though I pay taxes in this town I still would be happy to purchase that. Finally the fees at parks are often 10\$ or higher. It is time we look after the town and make sure the revenue generated is actually enough to help make pacific city cape lowlands downtown area safer.</p>

Submission ID: 07d30867-b6b9-41e0-b6fd-f453b6e94346

Record ID: 750

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 3, 2021 5:03 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Sarah
Last Name	Hardy
Email	Shardy718@gmail.com
Public Comment	I believe vehicles should be restricted on the PC beach. As someone who frequents the beach, especially in the summers, I have witnessed many people, children and dogs almost get hit by vehicles on the beach. There are too many people on the beach, especially on weekend summer days for this to be safe. The safest I have felt on the beach in years was this past summer when vehicles were restricted. That being said, with a limited number of parking spaces in the lot, there will likely need to be a ranger stationed at the parking lot entrance (as there was last summer) to enforce a one in, one out policy on busy days.

Submission ID: 59cd3f07-cea6-4d23-8e96-05c3d904d8dc

Record ID: 749

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Wednesday, February 3, 2021 3:51 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	James
Last Name	Archibald
Email	Archyji@gmail.com
Public Comment	<p>I am concerned about the beach closure in regards to parking availability and safety in the lot. The parking lot at this time during the beach closure has become chaotic and problematic with confrontations. I understand the ecological impacts of a vehicle on the sand. But it allows beach access to the disabled and helps families with small children enjoy the beach without having to venture too far from their supplies. I am also concerned with the newly proposed 10.00 fee. You close the free parking and then charge for the 60 available spots? So now only affluent visitors can enjoy PC? I think Tillamook county is working in the wrong direction. Just like charging rebuilding fees to the wildfire victims and claiming their hands were tied the whole time. When it turns out they didn't have to and shouldn't have imposed those fees.</p>

Submission ID: d629a2f7-9cca-4e85-a39d-c84834f74dc9

Record ID: 748

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Tuesday, February 2, 2021 12:45 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Keith
Last Name	Garlinghouse
Email	kdg873@yahoo.com
Public Comment	<p>I am a Pacific City homeowner at 33580 Madrona Street. I completely support banning driving and parking on the beach from Cape Kiwanda south as proposed except for boat launching and associated boat vehicle parking at the cape. I would like to see access and parking available for boat launching (Dory's, kayaks etc.) continue at the cape. Dory's are a historical use and still a very important part of our local community. I personally have a fishing kayak that I launch at the cape and I need to continue to have vehicle access to launch it. However, the traditional driving & parking within this section for the general public needs to end. Too many people now utilize the beach in this section daily including pedestrians, children, surfers etc .and general public driving and parking creates many conflicts and safety concerns. There was a time when vehicle driving/parking within this beach section made sense but that has long past due to the increase in use of recent years. The temporary closure of general public driving/parking within this section starting spring 2020 to present was a a great relief. People adjusted to it very nicely. The quality of the beach experience for everyone was greatly improved. The effect on me personally is I now can enjoy the beach without dodging cars and worrying about our children. There is less trash. The number of visitors was unaffected from my perspective and I doubt there was any negative effect on local businesses. Overall we enjoyed a much better beach experience than when cars were allowed. Thanks so much for the temporary closure. It was great. Lets make it permanent, but, continue to allow boat access and associated boat vehicle parking near the cape.</p>

Submission ID: 0bec7008-6464-49db-a1cc-259e3574e950

Record ID: 747

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Tuesday, February 2, 2021 12:02 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	nanci
Last Name	sheeran
Email	nancis107@yahoo.com
Public Comment	I appreciate the thought and work that has been so far done on this important issue. I support the proposal with one addition. The area at the mouth of the Nestucca on the ocean is a beautiful wildlife area. I have seen people in cars chasing the wildlife that rests in that area. If I had my total way I would restrict driving on the entire coast, but knowing of the issues that we have with parking and use I would propose that driving permission stops significantly before the mouth of the river/bay. That area should be left to the wildlife that resides there and to those that walk to admire the area.

Submission ID: 4b1154b1-cbee-4a95-938f-574c11190afd

Record ID: 746

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Monday, February 1, 2021 6:23 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	John
Last Name	Probasco
Email	Pdxprobascos@gmail.com
Public Comment	<p>I believe shutting down the beach to public vehicle use will be highly detrimental to Pacific city community, economy, real estate and ultimately the residents themselves. I would argue that vehicle access to the beach is one of the main factors that has made Pacific city what it is today especially in regards to its growth and popularity in the last 15 years. Since the closure to vehicles we no longer regularly visit Pacific city even though it was one of our favorite places in the Northwest. The main reason we no longer visit PC on a regular basis is that without being able to drive down onto the beach we are faced with the following problems. 1. Early departure time required when traveling from Portland in order to potentially get a spot anywhere near the beach. 2. Challenges involved with lugging all the various beach gear down to the beach including surfboards, food, etc. for a family of 5. 3. Quick day trips to the beach are no longer desirable during peak summer hours when factoring in a four hour round trip from East Portland in addition to the first two issues. Therefore unless you are purchasing overnight lodging a day trip to PC is no longer desirable during the peak season, unpredictable and stressful. Previous to the vehicle access restrictions we were considering purchasing property in PC, now we are looking for property in the Hood river area. However I have a few suggestions that may strike a compromise with preserving vehicle access as an option while also eliminating the issues related to vehicle use of the beach. In no particular order and in combination or not; 1. Create a toll at the entrance of the beach ramp and charge \$20 (or whatever fee) for day use of the beach and require four-wheel-drive inspection prior to access being granted. 2. Create a limit to the number of vehicles that are allowed on the beach at any given time. Again 4x4 required. 3. Consider a special beach access permit that requires an ATV or 4x4 type sticker with an annual registration. *all proceeds will go towards the beach maintenance or other community needs (INCLUDING A SKATEPARK).</p>

Submission ID: 63ba8907-5b87-4ff3-9221-9dadd53576a1

Record ID: 745

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Sunday, January 31, 2021 5:58 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Chester
Last Name	Austin
Email	chetaustin8@gmail.com
Public Comment	<p>To whom it might concern, I'm writing in regards to possible Beach closures of access. The access in particular I'm writing about is the one just south of Tierra del Mar that leads to a short Beach going south. the north side is to the right that's available to go certain times of the year or week. This is the only access my partner has to get down to the beach and walk, is driving into the area. There's no wheelchair or access that would work otherwise. It's a very small Beach and we do take pride in caring for that beach including cleaning it up of garbage from the ocean or from the people as well as from dogs. Go look and spend time on that beach it's very quiet and Serene most of the time for just a short little Beach. It's very clean. that's because of the people that live here and love that beach it's their home. our community respects and loves the areas we go to all the time and even though I'm not an expert in the other areas I just have to say I really hope this access can remain open at least in the off times when there's not a million people visiting if that is the issue. please remember us in making these decisions that care for that Beach. It was sad to see it closed off and to be able to view garbage that we couldn't even pick up because we couldn't get there. maybe the ocean doesn't need all of this but it definitely needs those that love it and it's our home base. Thank you, Chet Austin</p>

Submission ID: c852c454-c661-484e-8c05-c638a3fda046

Record ID: 742

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Sunday, January 31, 2021 5:51 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Brenda
Last Name	Sours
Email	heartinspections@gmail.com
Public Comment	<p>Try to keep the to the point in short. I'm disabled, I need to drive into the beach so I can walk on it. I used the beach access at the south end of Tierra del Mar. I rarely ever go north of that access but I do park my car in near the sign at times if it's busy and they aren't supposed to be down by Tierra del Mar so it's kind of a shield or wake up for tourists. Although I can't walk far I do enjoy walking around that area and if I need to go further down on the beach I take the car and go further down than walk that area. I love and care for the beach very much. We have always brought extra bags to pick up garbage of any size and take it home to dispose. Even in the days where stuff was coming from Japan if it was small enough to take home a dispose we did! Anything too big I would ask for help and get them to put it down where the entrance is for the county I've always considered this my beach and taken pride in making sure it's clean and pure. I enjoy how quiet the beach is most of the time. I'm not alone and how I feel and I'm afraid there's many people that do not use the computer and may not understand what is going on or what they are going to lose. Just because their old timers they shouldn't lose their Beach. the county doesn't have anybody down there cleaning it up or patrolling it I've never seen one person. It's us the people it's our beach and everybody's talking about taking away our beach except for the people that live here and take care of it. We've been through two meetings already with the commissioners I've written letters that have never been answered by the commissioners I've written letters to all of them for their meetings and never been addressed or answered. I'm tired of being ignored. we are the people of the beach that take care of it and patrol our beach. If the fear is of the tourist I don't mind if it gets roped off on big tourist times or weekends. I just plead please don't take my beach from me. I live nearby and this is my access to the ocean and the sand. I'm not privy to all the info on the other accesses but I do have to say the one near pelican pub where the door is go should not have public cars. There's no respect from the tourists for the Dory boats. I've watched and it's crazy. We have seen the tourist make many bad decisions on a weekly basis and we're still not billing them as far as I know for ignorance and ignoring warning signs and getting in trouble. Some areas are managed and garbage pickup etc by citizens down here and I think those citizens should be recognized and have permits or key to the gate to continue what they do. it's the way we've done things for a long time and it's worked and if the tours are so much over the top and not able to be handled we do understand temporary closures may have to happen and that is fine we just don't want permanent closures. please don't take my access to the beach away it's the only one I have it's my quiet place it's my anxiety reliever it's my dog's best exercise and yes we pick up poop too. Please think of the people that live here it's our home even though we need to share the ocean with everybody it's our home and I think everyone is forgetting that Sorry it wasn't short... I have to speech text and I think I got carried away there's any weird words in there blame it on Google please. Sincerely, Brenda Sours</p>

Submission ID: c9a644ed-b699-4f7a-b489-b77f86503825

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Sunday, January 31, 2021 11:06 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Gregory
Last Name	Elwood
Email	Geelwood47@gmail.com
Public Comment	Tillamook County needs to enforce current current beach restrictions not come up with new ones to please local residents. Remember the Oregon Beach Bills of 1913 and 1967. The proposed changes would close the beaches in question to the elderly and disabled like myself.

Submission ID: 499dc390-a9a8-4a3c-9af2-b3639f805fd2

Record ID: 740

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Sunday, January 31, 2021 3:18 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Vitaliy
Last Name	Radu
Email	Vvradu@gmail.com
Public Comment	I am against the amendment to restrict vehicles from the beach. I believe the access is great for people with disabilities and families alike.

Submission ID: 1b491dcd-c6bc-4966-951f-45e253505814

Record ID: 738

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, January 30, 2021 11:26 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Kayli
Last Name	Jones
Email	kayli.jones441@gmail.com
Public Comment	Hello OPRD, I spent most of the summer parked in the public parking lot adjacent to the brewery as i learned to surf and enjoyed the atmosphere of the Oregon coast. I am not in favor of people, besides the doryman, being able to park on the beach. Every morning before surfing me and a friend would walk down the beach and fill bags full of trash. I believe that allowing people to drive on the beaches would allow people to bring more waste closer to the ocean and inevitably lead to more pollution as it gets "forgotten" or falls out of vehicles. I am not in favor of charging \$10 (or any amount) to park in that lot. While it does become very busy in the summer people come and go so quickly there is always a spot available soon. I think it would also ruin the atmosphere of the beach, drawing a different crowd, and create congestion other places. Thank you for considering my thoughts, Kayli Jones

Submission ID: 9f0ed801-9d33-4410-8609-0a9c784d3046

Record ID: 737

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, January 30, 2021 7:08 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Michael
Last Name	Clarke
Email	transvolcanic@gmail.com
Public Comment	The beach areas in question are critical habitat for a number of shorebirds some of which are endangered and, as importantly, represent a fragile ecotone that is pushed to the limit of its existence by tourists and residents in Tillamook Co. Oregon should be moving toward the absolute maximum limits on driving on this fragile environment or banning driving year round.

Submission ID: 2ccb0455-7a72-4e5e-9527-99b5e6a8ad74

Record ID: 735

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, January 30, 2021 3:36 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Audrey
Last Name	Addison
Email	audrey.e.addison@gmail.com
Public Comment	Yes! The fewer cars on the beach the better. I'm a fan of birdwatching, this proposal would inspire me to actually visit that part of the beach, shop at nearby local restaurants, and enjoy a more peaceful beach experience. I see this as a positive change. Thanks for considering.

Submission ID: 1c9e90fa-9787-47a4-a8e3-d86ba69a327b

Record ID: 734

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, January 30, 2021 2:20 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Rich
Last Name	Gailey
Email	richroge@comcast.net
Public Comment	I am in support of the proposed closures to driving on the beach at Cape Kiwanians and Tierra Del Mar. it has become too busy for cars to safely be on the beach. It also tears up the beach and takes away from the enjoyment of the beach. Last summer when cars were not allowed there still many people using and enjoying the beach.

Submission ID: 14bb61f3-eff0-46da-925e-329bbf92d257

Record ID: 732

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, January 30, 2021 1:41 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	France
Last Name	Davis
Email	france.in.oregon@gmail.com
Public Comment	As an Oregonian, an outdoorsman, and a birder, I support extending the ban on driving on the beach, as proposed. I will continue to enjoy Oregon's beaches without the threats to people and animals from vehicles driving on the beach.

Submission ID: a7411862-2bd3-4f42-a36d-a2ca7d778dd1

Record ID: 730

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, January 30, 2021 1:40 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Kathy
Last Name	Patterson
Email	kathyp@countrycablevision.net
Public Comment	<p>My husband Bruce and I are both birders and have visited the newer state park Sitka Sedge three times during the last few months. The northern stretch of beach sand is closed to motor vehicles, kites, dogs etc. during the western snowy plover nesting season March - September . We walked this stretch of beach with our binoculars during open times most recently on January 19th and January 29th, 2021. We didn't see any sign of snowy plovers in the 3 times we've been there. However, we have had to get out of the way of speeding vehicles zooming north and south down the sand to the Sand Lake Estuary and back. We STRONGLY BELIEVE this stretch of beach should always remain closed to vehicles, dogs and kites. Just because we didn't see any Snowy plovers, it doesn't mean they are not there. These vehicles are going as fast as possible and could easily hit any shorebird, such as plovers and sanderlings on the beach. Kathy and Bruce Patterson Salem, OR 503-581-7728</p>

Submission ID: 32d633b0-a36c-40f2-9309-f07d2d321910

Record ID: 729

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Saturday, January 30, 2021 9:20 AM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Paul
Last Name	Snodgrass
Email	Pdypaul@live.com
Public Comment	<p>My family and I have been a long time users of the Cape Kiwanda beach area in Pacific City (over 25 years and leased and still do lease permanent space in the RV park for many years). As you may be aware, they have closed the beach access to all except the "dory" fishing boats, trucks, and trailers. This closure was stated originally done due to Covid and the lack of funding the state parks were / are facing. This has now morphed into the complete closure except for one special interest group. They say it's to prevent accidents between motor vehicles and people although so far there have been none. The only collisions have been with boats and people in and around the water there, last one cost the state over 4 million then a uninsured "dory" driver ran over Cole Ortega. nothing has been done since that accident and I have seen many close calls these since. I'm sure then next one will be substantially more as nothing has been done to prevent it from happening again. This action did create a major accident on the road there (life flight was used) as well as it blocked access to rescuers that may have cost a fisherman his life off the south end of the haystack rock there. Even after the Tillamook commissioners held a town meeting which I spoke at with many others, and they did a survey of hundreds of people overwhelm in support of keeping the beach open (including the local living people). This seems to be guided by one individual on the commission steering the others to make this move. So now they want to start charging to park there,,, ok first you need somewhere to park, then how to safely get all the people to the beach... remember there's been one major accident on the road there due to the parking restrictions on the beach last summer,,, this next is projected to be 5 time more due to Covid relaxed rules... so..... The bottom line is we need to stop this from passing... It will make matters there MUCH WORSE... check the surveys and testimony given already... if anything should be restricted it's the speed boats running over people there.... Nowhere else can a boat go faster than 5mph within 100 ft. of swimmers.... it's crazy there with the boats... I shot the pictures of Cole being run over by the boat... PLEASE HELP!!!! this needs real planning and additional parking prior to removal of hundreds of parking spaces.</p>

Submission ID: 66289173-06b3-49ad-87d2-f930e1c003e8

Record ID: 728

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Friday, January 29, 2021 8:22 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Matt
Last Name	Cuddigan
Email	Mdcuddigan@gmail.com
Public Comment	It is not fun to almost get run over when going to the water because of a parking lot and road down the beach. Almost a unusable beach.

Submission ID: 1a430993-d480-4fe9-a155-f38385290b78

Record ID: 727

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Friday, January 29, 2021 8:01 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Heidi
Last Name	Haserot
Email	hhaserot@hotmail.com
Public Comment	Restrict it. Causes too much litter and other pollution. The beach gets trashed when cars are allowed, and is unsafe for all those people and kids trying to enjoy the beach. The handicap parking at the top of the parking lot is suitable. Also charge the fee and use the money for beach cleanup/trash cans.

Submission ID: a98d079a-e555-4c08-b7d0-4184c01ff1ed

Record ID: 726

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Friday, January 29, 2021 7:00 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	John
Last Name	Jasper
Email	jasperjf@gmail.com
Public Comment	This decision will negatively affect my property value in Pacific City. This closure will dampen the appeal for tourism and recreation in the Pacific City area by changing the long standing ability to have a uniquely Oregon experience of driving on the coastal beach. Also, the decision to allow the Dory boats to launch South of the existing boat ramp is extremely dangerous to the abundance of recreationalist on the beach and in the water.

Submission ID: 41d8383a-c4fd-4ac4-9a8f-c7a93a26d91a

Record ID: 725

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Friday, January 29, 2021 5:40 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Maureen
Last Name	Wisehart
Email	sophiasam12@msn.com
Public Comment	I am not in favor of any parking fee until there is full disclosure on how these proceeds from this multi million dollar proposal will be used to improve the communities and lives residence of South Tillamook county.

Submission ID: 1aa3853d-18a8-45e4-bf79-2718386fe9c2

Record ID: 724

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Friday, January 29, 2021 5:30 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Maureen
Last Name	Wisehart
Email	sophiasam12@msn.com
Public Comment	I have been a full time resident of Pacific City for 6 years and have had a second home here for 12. I am in full support for the proposed driving restrictions. Our family has enjoyed the ability to drive on the beach over the years but every year it seemed to get more crowded and more dangerous as the crowds have in increased every year, especially in the summer months. The summer of 2020 brought a needed relief from the unsafe, overcrowded beach parking scene in Pacific City! Currently the driving access from the south border of Tierra Del Mar to the mouth of the sand lake is full of ways to be misinterpreted by visitors, thus tend to drive down there despite the current restrictions. It would be safer and more easy to enforce one rule; no driving south to the mouth of sand lake year round.

Submission ID: e2609236-e46d-4b6f-8e1f-0d9178ede626

Record ID: 723

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Friday, January 29, 2021 4:40 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	L
Last Name	L
Email	Satyahealingpdx@gmail.com
Public Comment	Recreational driving and parking on the beach should be permanently banned. Driving on the beach causes environmental damage affecting our water quality and wildlife. In addition, limiting the parking will help control the number of visitors. Too many tourists have been littering and trashing our beaches! Let's preserve the natural beauty of our beach and keep the vehicles off the sand!

Submission ID: c61260fb-b07c-4fd6-8a5d-0bea33185193

Record ID: 722

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Friday, January 29, 2021 4:39 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Alexandra
Last Name	Peters
Email	Aplloren@gmail.com
Public Comment	Please restrict! Three reasons -general safety, with new increased crowds in the coast it is no longer safe for beach going families to be amongst cars -keeps ramp for dory man and allows them to better navigate their entertainment and exit. It is sad to see people stuck in a line after random cars are stuck in sand when they are just trying to take in their catch. -environmental factors! Less cars, less impact, overall longevity. And a bonus reason, the beach is more enjoyable for all as a whole with less cars causing chaos.

Submission ID: fa257d1d-4a9a-4417-8a8c-3750d4d9c5e3

Record ID: 721

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 3:07 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	DIRK
Last Name	CONRADIE
Email	DIRKCONRADIE@YAHOO.COM
Public Comment	<p>Our family have been coming to Pacific City for more than ten years and it has become our favorite place. Our only complaint over the years has been about cars and driving on the beach. During the pandemic we have experienced the beach without cars and it has been nothing short of amazing. We have seen families on the beach, little kids running around and more people walking and enjoying nature than ever before. We have also experienced more birds and wildlife than ever before. There are no ruts on the sand, no car tracks through the dunes and walking on the beach feels safe again. Somehow people found a place to park, dori boats have been extra careful and the quality of the beach experience has increased significantly. Before the restrictions we have had numerous occasions of cars driving very close to us at high speed. We have felt unsafe walking and enjoying the waves and the beach. Over weekends it had become similar to walking in the middle of the road, you always have to be on the lookout for cars. While some drivers have been considerate of pedestrians on the beach, others drive at high speed close to pedestrians without regard to their safety and/or enjoyment of the beach. There are no police to enforce reasonable speed limits, no rules as to how close to people, dogs, horses and children they can drive and no one to stop drivers from driving in the dunes. At the turnaround we have seen many close calls where cars have to get a lot of speed to go over the dune. When coming over the dune there is a blind spot and it creates a very dangerous situation. It is rare to see a driver going slow over this dune, since the sand is deep and drivers feel like they need speed to get to the hard sand. We avoid this area due to the dangerous conditions for walking. Since the pandemic we have noticed families returning, umbrellas on the beach, kites in the air and all of the things we traditionally expect to see when going to the beach. People have started using Bob Straub more and running and walking on the beach has become popular again. More people are able to enjoy the beach since driving has been banned. When parking was allowed on the main beach, it became a parking lot during the summer. We saw kids making sand castles and running around in this parking lot. People trying to navigate cars and parents worried about cars and kids. We have seen numerous close calls as inexperienced drivers try to navigate the sand and people. Cars on the beach significantly take away from the peaceful experience and enjoyment. As far as I can tell there is no purpose for driving on the beach other than the "fun" of doing so. While I can understand driving to launch a fishing vessel as long as there is adequate safety measures, driving for fun comes at a very high cost. There are significantly more people walking, fishing, playing with their kids, enjoying the silence, swimming and playing on the beach now that it is safe to do so. You can see this in other Oregon beach towns such as Cannon beach, Manzanita, and more. These towns have created safe beaches and even have access for disabled people with beach wheel chairs. For those of us that want to drive for fun, sand lake recreational area is nearby. Cars and beaches full of people do not mix. Pacific city is no longer a remote quiet fishing village with no tourists and times have changed. It is time to permanently ban driving and parking on the beach.</p>

Submission ID: be2734de-c6e5-49c5-9469-4f9164cfeccf

Record ID: 778

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 3:18 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Craig
Last Name	Cleary
Email	Discocraig@gmail.com
Public Comment	I am against the closure of these beaches to the historical use of vehicles. I am a regular user of these areas and I feel that closure, as opposed to seasonal management and enforcement of existing rules is a terrible decision. I have been on these beaches for over 20 years. Please don't cancel our historic access. Thank You.

Submission ID: 054a7860-c4bc-4c46-b763-10081e5a0ee0

Record ID: 779

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 3:26 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Katherine
Last Name	Saunders
Email	katefsaunders@gmail.com
Public Comment	I am favor of NOT allowing driving on the beach from Tierra Del Mar to the mouth of Sand Lake and restricting driving on the beach in Pacific City unless it's boat related. I don't own a business, but I do know that there are many people, like myself and the rest of my family, who avoid these areas where driving on beaches is allowed. Who wants to share the beach with someone driving on it, who might be drunk or not paying attention? Who wants to take a nice beach walk in traffic? Not me, nor the majority of people that I know.

Submission ID: 8db8bec5-4954-4e59-b7d0-42bb9d081a86

Record ID: 780

MARSHALL Janelle * OPRD

From: oregon-gov-web-services@egov.com
Sent: Thursday, February 11, 2021 3:39 PM
To: PUBLICCOMMENT * OPRD
Subject: Restrict Beach Driving in South Tillamook County
Attachments: formsubmission.csv

First Name	Dave
Last Name	Ptrice
Email	oregondave@gmail.com
Public Comment	The long-term viability of South Tillamook County as a vibrant tourism destination (not to mention livable community) that will help support local small businesses well into the future will only be helped by these proposed rule changes. Fewer vehicles on the beaches will not only protect those areas for future generations but will make those areas more appealing to more visitors.

Submission ID: 02eb789d-2bd8-4808-998a-19a49373a584

Record ID: 781