



# A wooden, scientific "message in a bottle"

German university team researches sources and dispersal of macroplastics through large-scale public participation experiment

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Ph.D. Candidate

*Project Macroplastics Pollution in the Southern North Sea – Sources, Pathways and Abatement Strategies*

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web: <http://www.icbm.de/geooekologie>; <http://www.macroplastics.de/>

# The problem – worldwide



# The problem – at home





# The project

## *Macroplastics Pollution in the Southern North Sea*

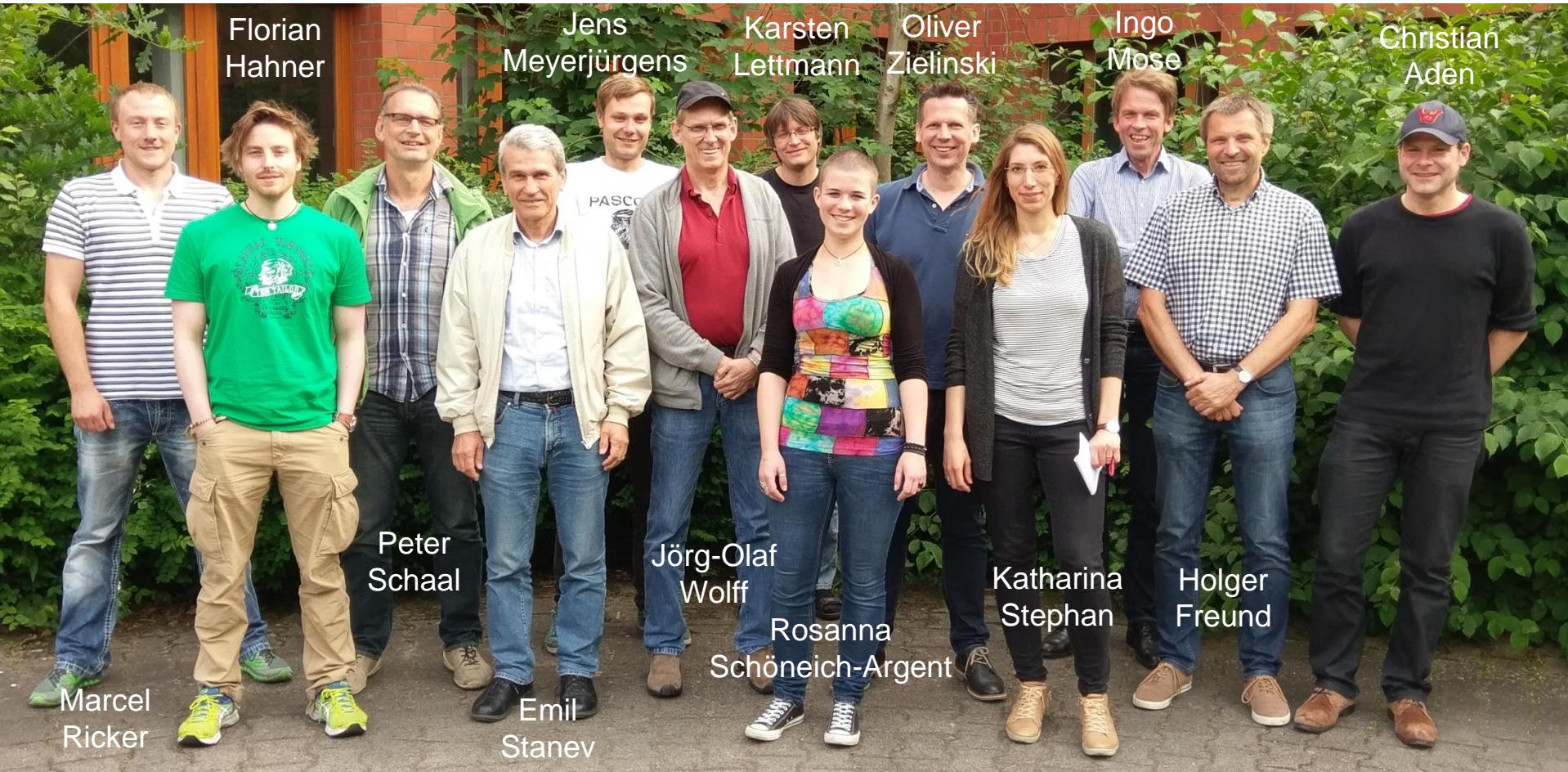
– *Sources, Pathways and Abatement Strategies*

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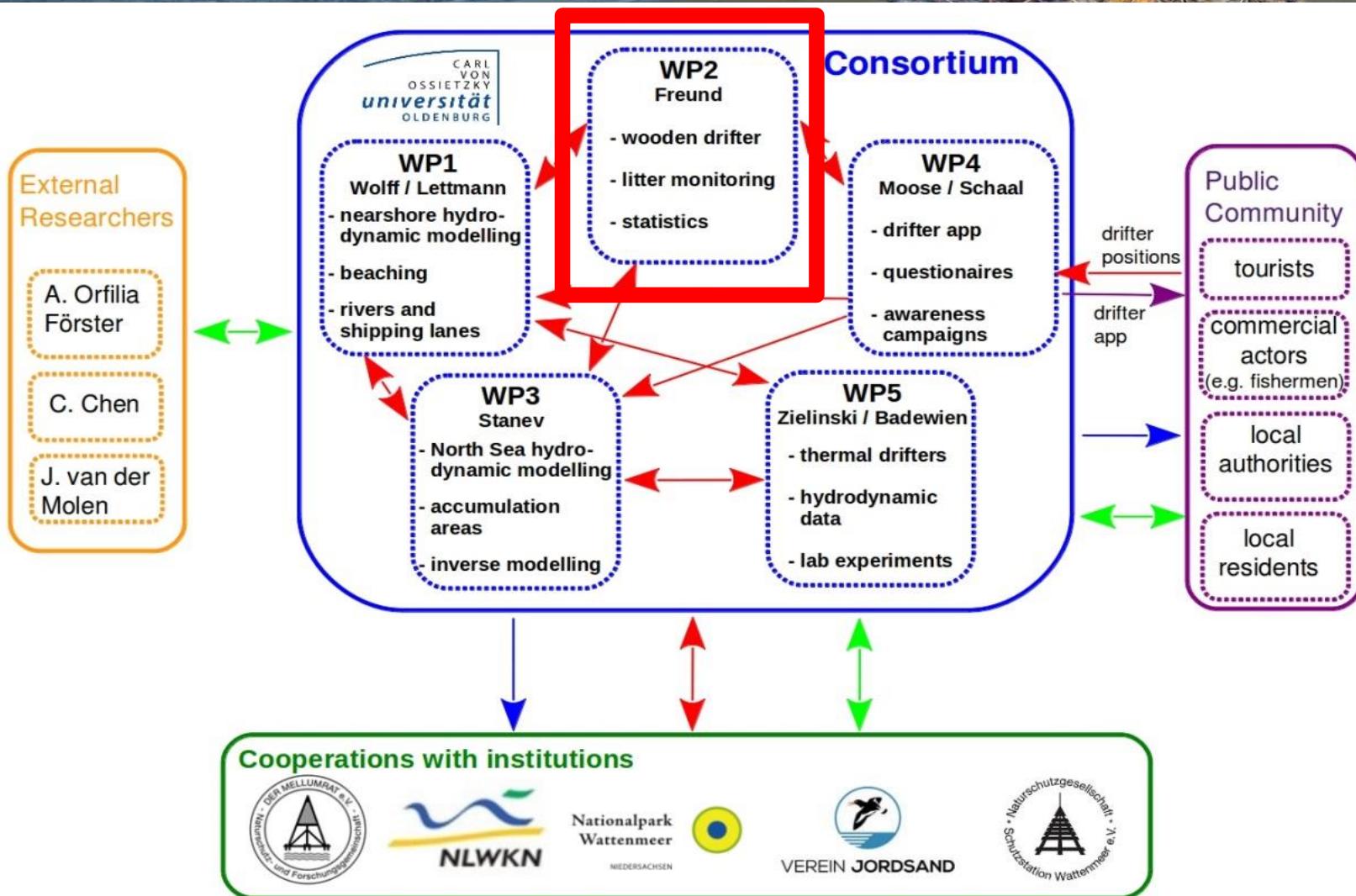


Niedersächsisches Ministerium  
für Wissenschaft und Kultur

# The team



# The team



# The inspiration

© A. Kaiser (pooliestudios.com) (3)



# The inspiration

© A. Kaiser (pooliestudios.com) (3)



Tracking the sources and sinks of local marine debris in Hawai'i

Henry S. Carson<sup>a,\*</sup>, Megan R. Lamson<sup>b</sup>, Davis Nakashima<sup>a</sup>, Derek Toloumu<sup>a</sup>, Jan Hafner<sup>c</sup>, Nikolai Maximenko<sup>c</sup>, Karla J. McDermid<sup>a</sup>

<sup>a</sup> Marine Science Department, University of Hawai'i at Hilo, 200 W. Kawili St., Hilo, HI 96720, USA

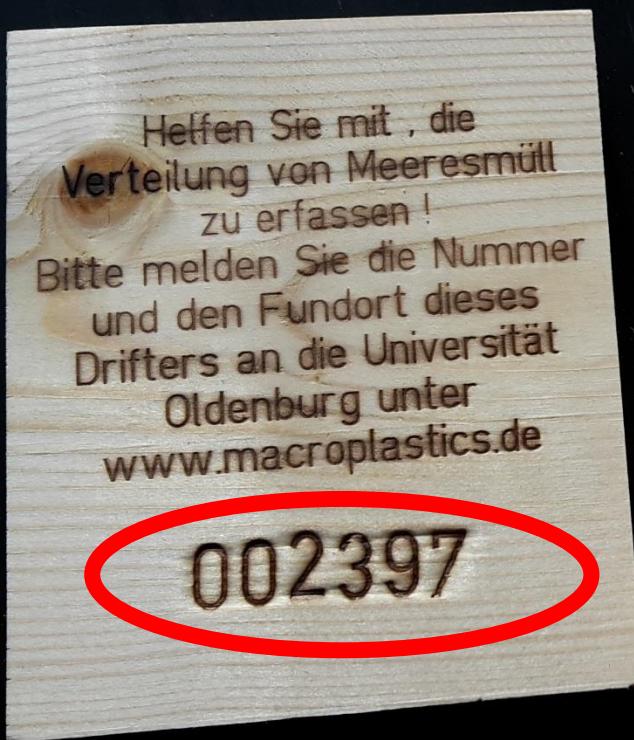
<sup>b</sup> Hawai'i Wildlife Fund, P.O. Box 70, Volcano, HI 96785, USA

<sup>c</sup> International Pacific Research Center, University of Hawaii at Manoa, 1680 East-West Road, Honolulu, HI 96822, USA



# The drifters

R. Schöneich-Agent



Help us understand the distribution of marine litter!  
Please report the number and position of this drifter to the University of Oldenburg:  
[www.macoplastics.de](http://www.macoplastics.de)

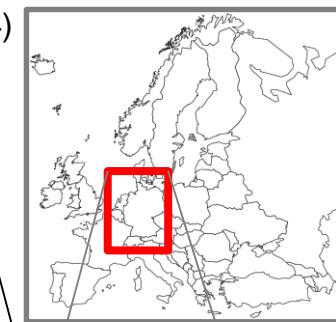


# The area

Created in Google Maps (2016) by R. Schöneich-Argent



(4)



(5)



# The work



S. Rixinger



R. Schöneich-Argent





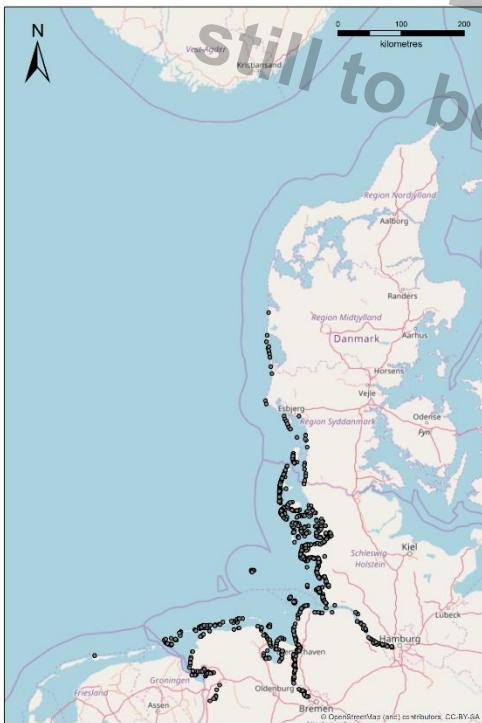
# And?

- December 2017 (shown data set): almost 18,000 drifter reports = report rate of >50 % (14 months after first release)
- >> Status quo (April 2018): over 20,700 drifter reports = report rate of 47 %
- reports from Germany, the Netherlands, Denmark, Norway and the UK

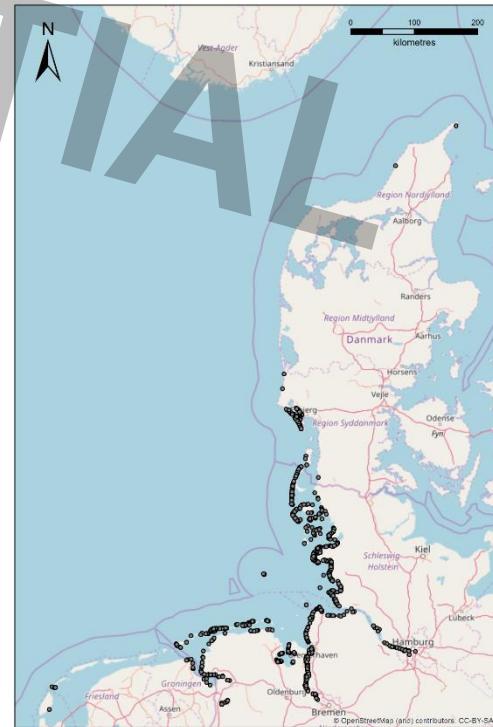


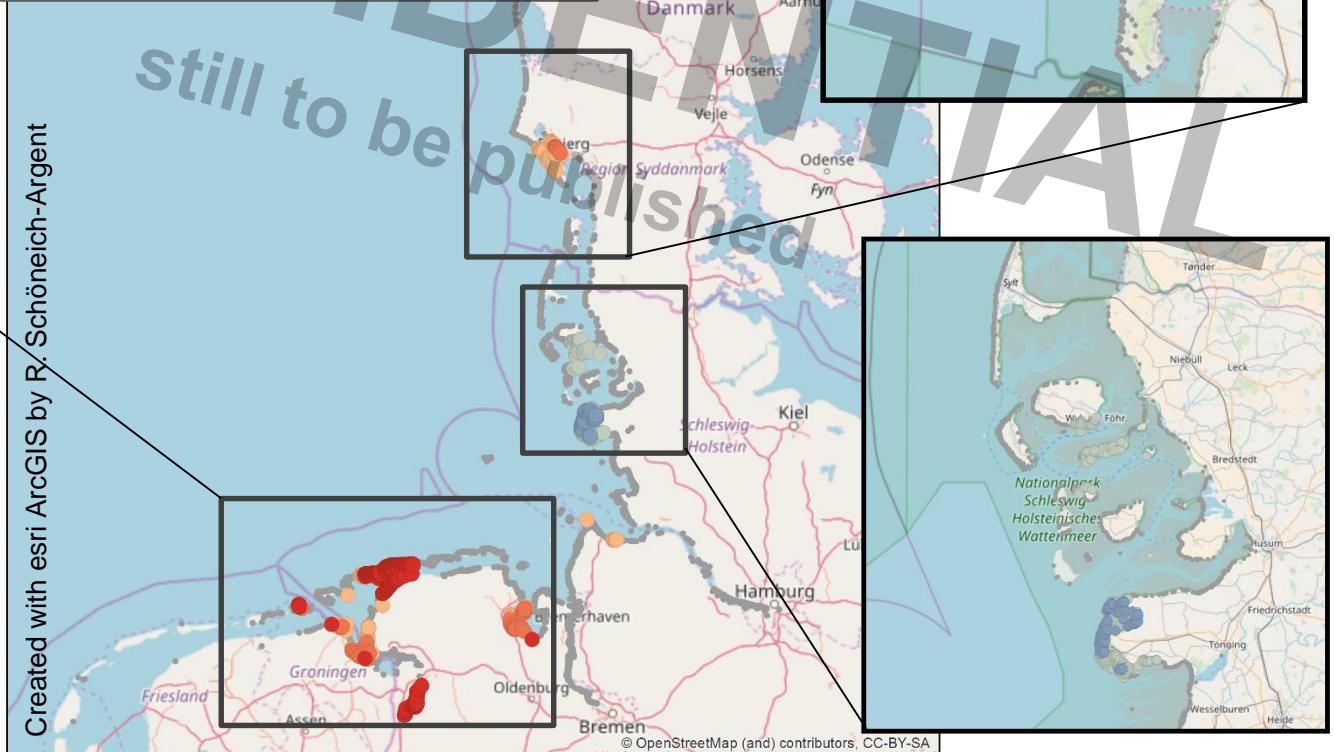
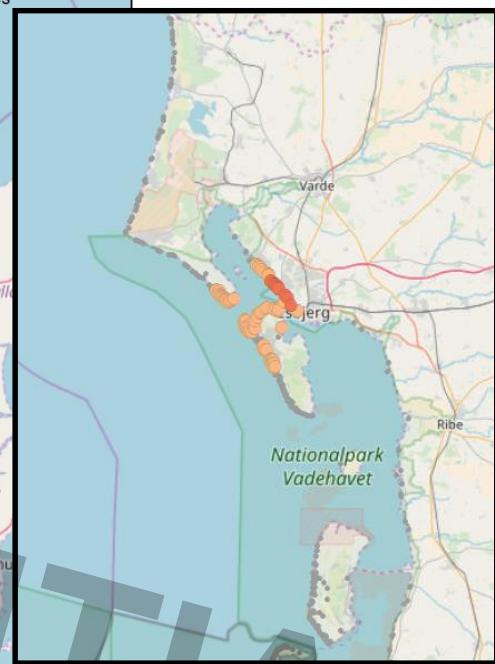
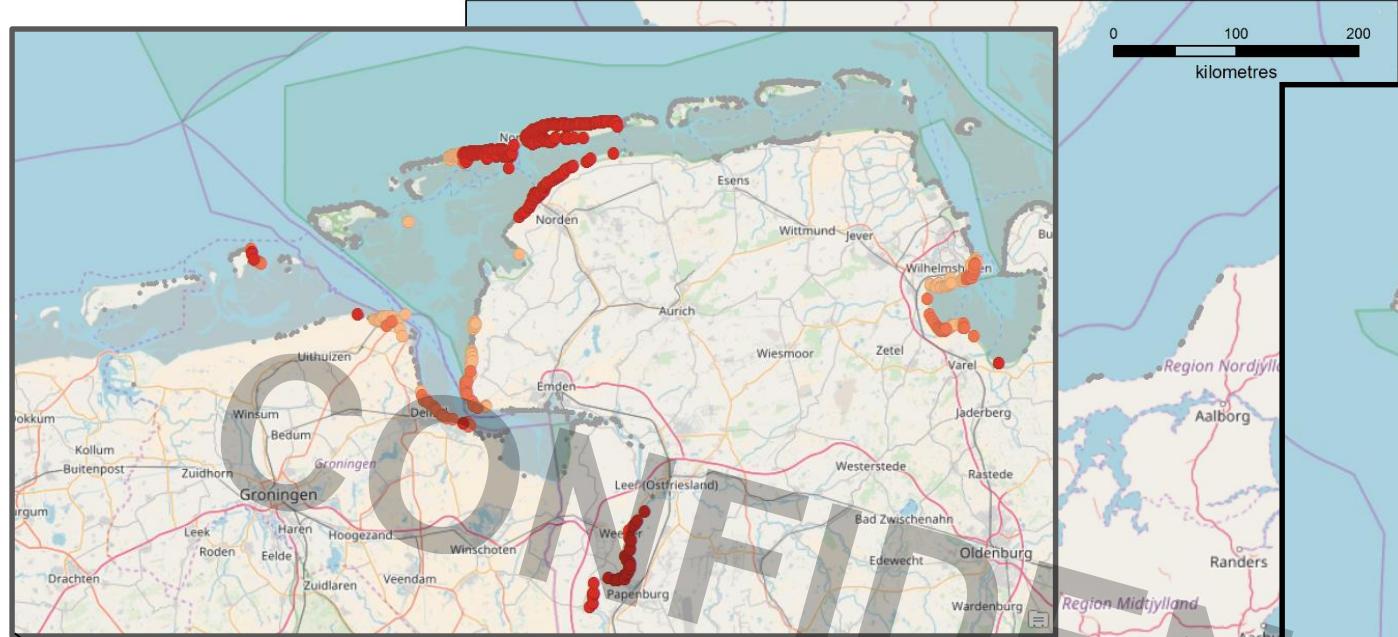


# Seasonal distribution and hotspots



autumn 2017





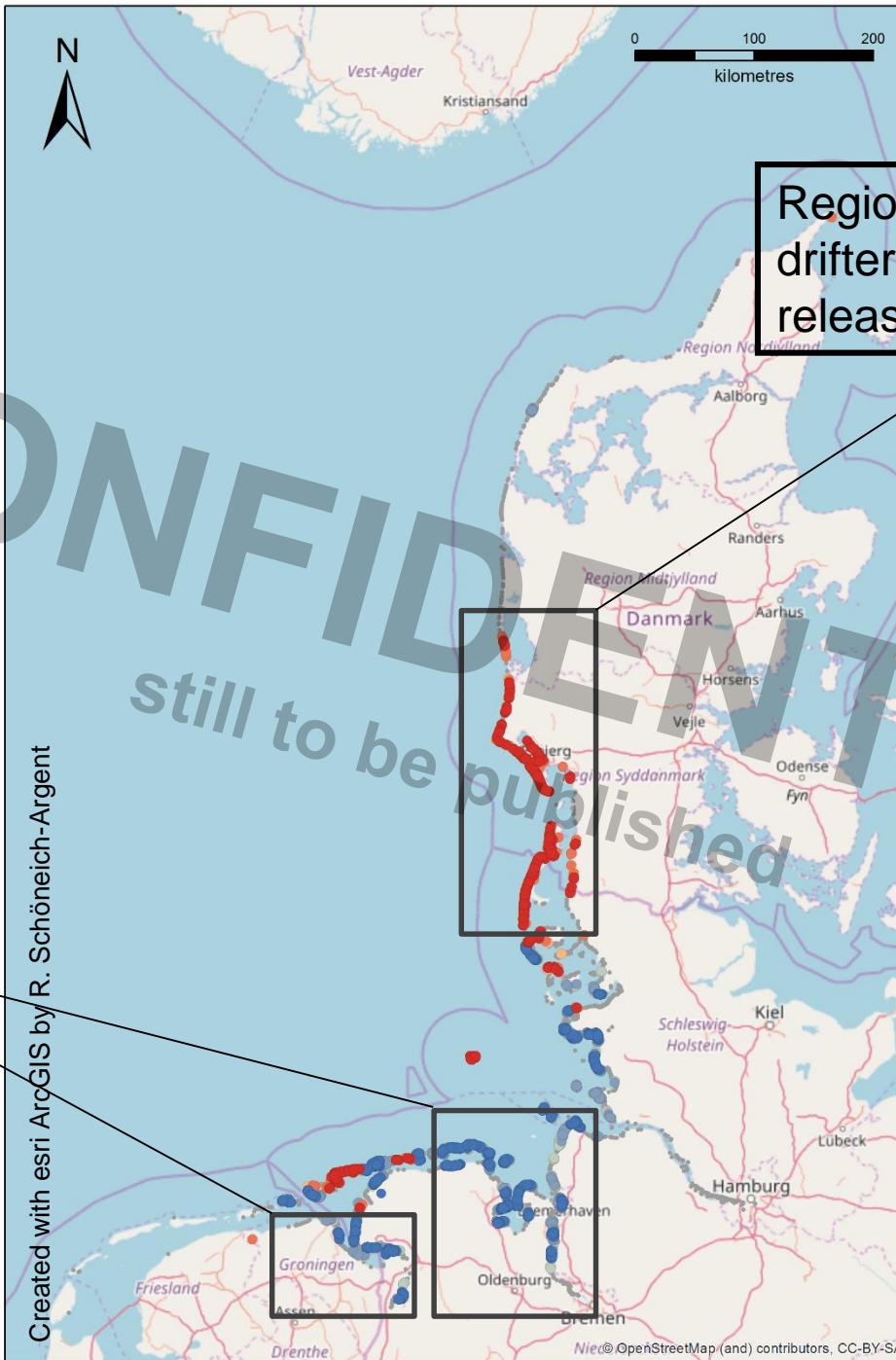


# General observations after 1.5 years:

- dispersal of drifters varies seasonally
- local hotspots vary seasonally
- overall significant abundance clustering along (East) Frisian coastline; cold spots in North Frisia



# Source-related dispersal





## Translated to floating litter:

- high proportion of litter appears to return to/remain on the Lower Saxony coastline
- floating litter generally follows currents east, then north towards Denmark and Norway
- dilution effect towards Schleswig-Holstein and Denmark but greater variety of sources  
**(disregarding waste input along those coasts)**

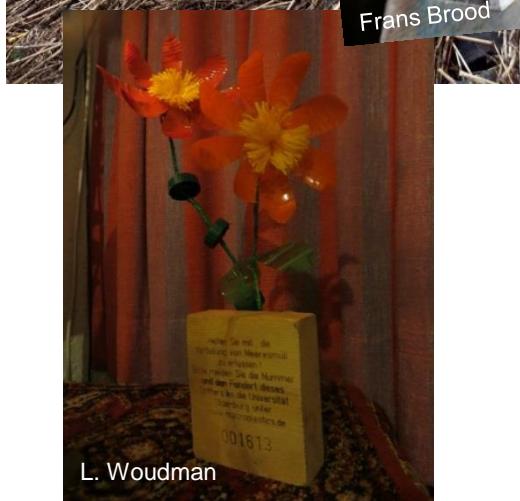


## Ongoing and future research aspects:

- ▶ effect of
  - coastal use and vegetation
  - accessibility of shoreline and river banks
  - wind and weather (events)
  - holidays
  - time
  - thickness of drifterson dispersal/reports
- ▶ small-scale observations
- ▶ linking litter data with drifter reports
- ▶ ...

# The people

Frans Brood

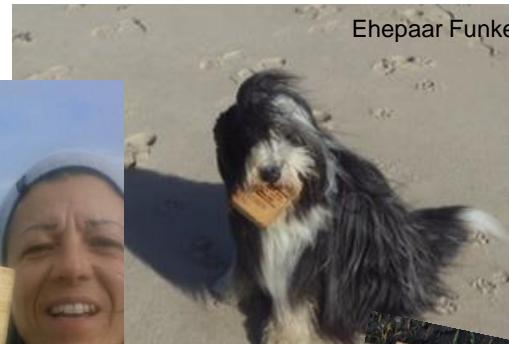


L. Woudman

A. Kramer



Ehepaar Funke



Ehepaar Weckel



Helfen Sie mit, die Verteilung von Meeresschutt zu erfassen!  
Bitte melden Sie die Nummer und den Fundort dieses Drifters an die Universität Oldenburg unter [www.macoplastics.de](http://www.macoplastics.de)

000676

M. Prinz



G. Plescher



O. Gent

**Ren Strand Fane** hat 2 neue Fotos hinzugefügt.  
5. August 2017 - €

I dag fandt vi envidre intet mindre end 85 af disse træklosser. De bruges i et forskningsprojekt i Tyskland som går ud på at undersøge hvor afdød, blandt andet det der bliver til havfald på vores strand, under når det strømmer ud i Nordsøen.

Det er et rigtig spændende projekt, og meget glindende at følge, hvis man finder en kold som kan enten henvende sig til os, så indrapporterer vi den eller man kan selv gå ind på [www.macoplastics.de](http://www.macoplastics.de) og angive hvor man har fundet den og oplyse det seks cifrede registreringsnummer som er påført hver enkelt kold.

På deres hjemmeside kan man også se hvor og hvor mange koldser der er registreret hvor.

Som sagt er det meget spændende, især hvis man har interesse i hvor havfaldet kommer fra, og hvis ikke selv har lyst til at indrapporterer så er i højelig velkommen til at henvende jer til os.

Übersetzung anzeigen

015901

15817

Rudbecks Delikatessen  
Uldsnedkeren  
SuperBrugsen F...

Deutsch English (US) Türkçe  
Español Português (Brasil)





...who are excited, hopeful, inspired and motivated by finding and reporting our drifters and thereby contributing to our research.

...without whom this project wouldn't be what it is.

**A big shout-out to all our public helpers!**



# THANK YOU!

## Image sources

- (1) <https://utopia.de/app/uploads/2017/11/plastik-muell-karibik-insel-p-caroline-power-171102-1280x600.jpg> (Accessed: 02/2018)
- (2) [https://media2.snbnews.com/j/msnbc/components/video/201705/lon\\_polart\\_170516.nbcnews-ux-1080-600.jpg](https://media2.snbnews.com/j/msnbc/components/video/201705/lon_polart_170516.nbcnews-ux-1080-600.jpg) (Accessed: 02/2018)
- (3) <https://www.flickr.com/photos/poolie/2894748746/> (Accessed: 02/2018)
- (4) <https://www.worldatlas.com/webimage/countrys/printpage/printpage.php?I=/webimage/countrys/europe/euoutl.gif> (Accessed: 02/2018)
- (5) [http://4.bp.blogspot.com/-5PuGs6BjTAw/TyP6XUKFwnI/AAAAAAAAMdc/D3-aqdCMw9Y/s1600/europe\\_e\\_germany\\_kouiki\\_1\\_2.gif](http://4.bp.blogspot.com/-5PuGs6BjTAw/TyP6XUKFwnI/AAAAAAAAMdc/D3-aqdCMw9Y/s1600/europe_e_germany_kouiki_1_2.gif) (Accessed: 02/2018)

Thanks a lot to everybody who provided photographs!

# The prototype



# The "oldies"

R. Schöneich-Argent



M. Heckroth



M. Heckroth

