Lights Reveal the Global Dark Fleet
David Kroodsma
Director of Research and Innovation
Global Fishing Watch

NOAA VIIRS virtual user’s workshop, June 29-30, 2022
Celebrating 10 years of SNPP
Creating impact at scale

Global Fishing Watch Research Program

+30 peer-reviewed papers published since 2016
+2000 citations
We have used the VBD product to:

- Reveal the largest known case of illegal fishing
- Match to AIS for our global interactive map
- Identify fishing grounds
Almost no vessels are using AIS in North Korean Waters
VIIRS shows fishing activity in North Korean waters.
SAR (radar)
Radar detections in blue, revealing large, metal boats.

VIIRS (night lights)
Reveal dim North Korean vessels (yellow), and bright Chinese (red)
Combining these technologies reveals dark fleet activity in detail

- > 900 unique Chinese vessels violating UN sanctions
- Likely caught > 220,000 tonnes of squid
- Catch valued at >$600M USD
Match VBD to AIS Globally
Massive untracked fleets in East and Southeast Asia
VBD clusters for cumulative years from 2017 to 2021 showing expansion of fishing areas and persistent fishing grounds.

Green dots are individual VIIRS boat detections.
Red polygons are delineated clusters based on density of detections (i.e., at least 20 detections per cluster with each detection within 10km from another).

Note: uses only VBD with radiance > 30
The fishing moratorium in ECS

We’ve developed a machine learning based VBD algorithm under collaboration with FRA in Japan. The fishing moratorium was introduced by the Chinese government recently and we are analyzing the impact through VIIRS data.
What’s Next?
What we would like to see...

- Develop VBD for other VIIRS sensor
- Reduce noise & improve South Atlantic Anomaly
- Process more historic data
- More satellites!
Thank you!

David Kroodsma
david@globalfishingwatch.org