

A comparative study of treatments of Atlantic Salmon (*Salmo salar*) against the salmon louse (*Lepeoptheirus salmonis*) in 2021 throughout the 13 production zones in Norwegian aquaculture.

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Background:

To protect the wild salmon population, against salmon lice the Norwegian government has set strict regulations for the fish farming industry that affect its productions growth.

One of these regulation is the traffic light system, separating the Norwegian coastline into 13 production zones. Yearly, each zone is assigned a color according to salmon lice's infection pressure on the wild salmon.

- **Red** = reduce the production by 6%
- **Yellow** = halt the production growth
- **Green** = increase the production by 6%

Salmon lice treatments

North of Trøndelag	Week 21-26
South of Trøndelag	Week 16-21
Under 4 C every 14 day. Higher than 4 C every week.	

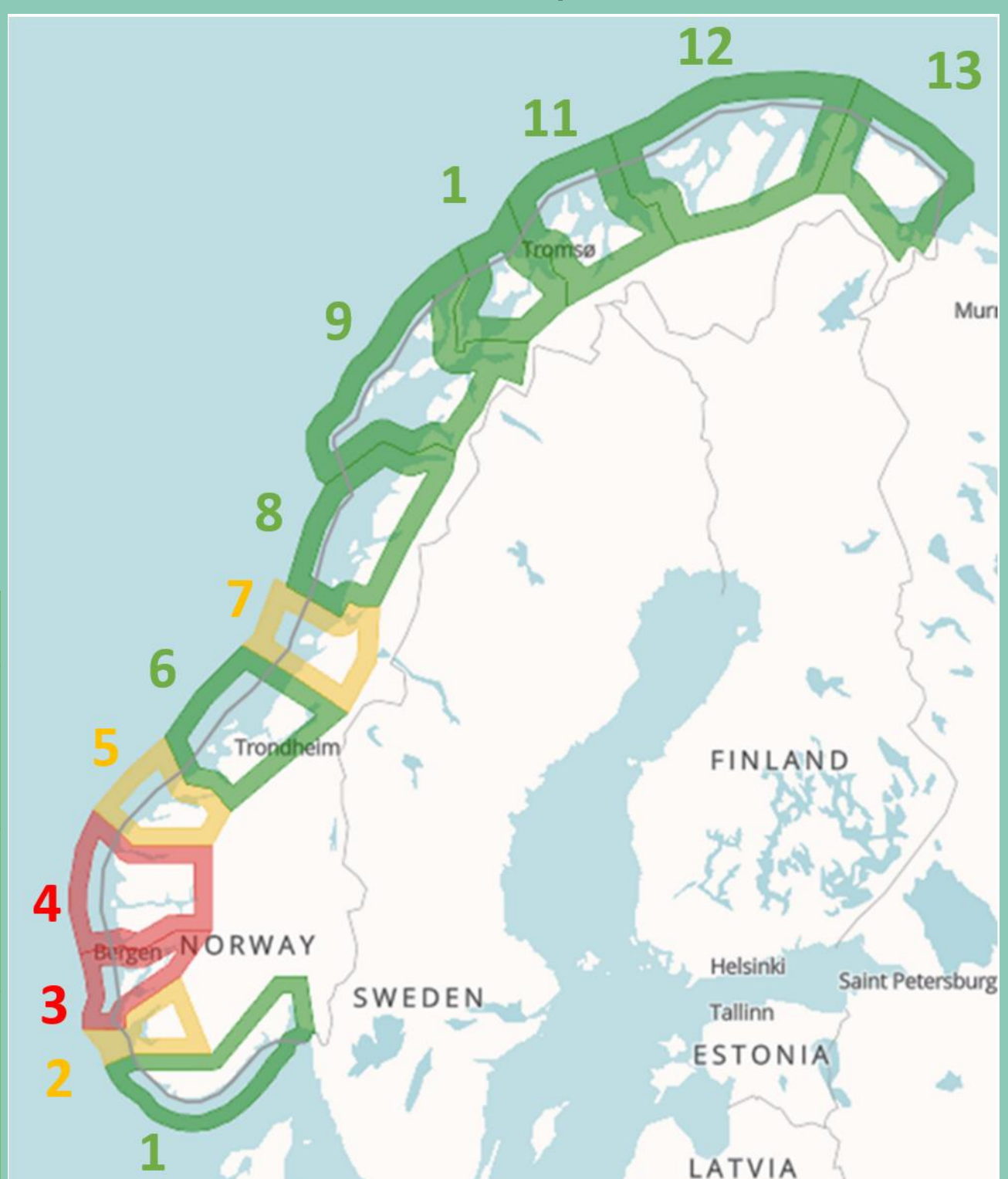


Figure 1: Schematic overview of the 13 production zones of Norwegian aquaculture taken from BarentsWatch's map function.

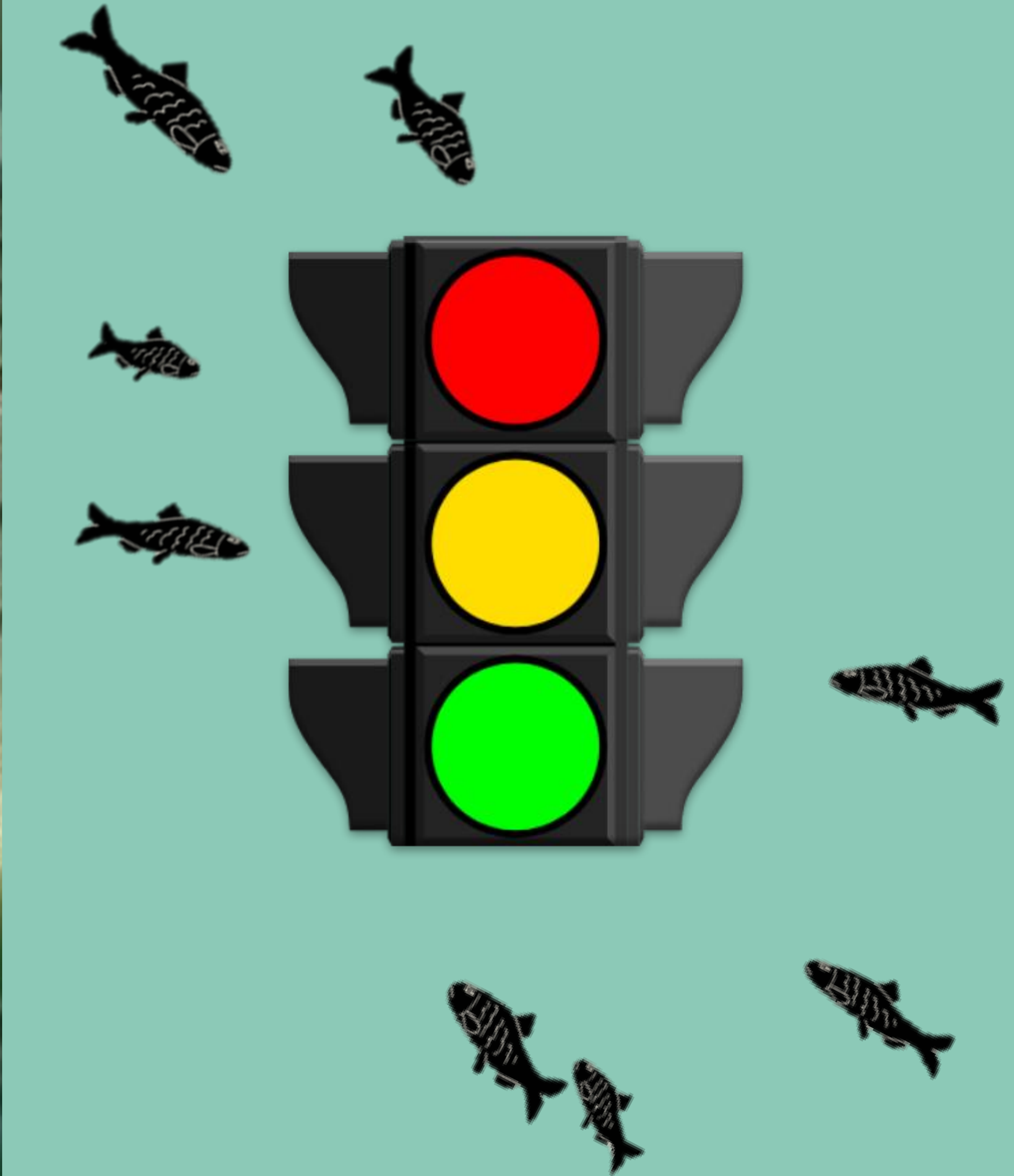
Hypothesis:

- ❖ The fish farms with the most delousing operations in 2021 will be in the red zones
- ❖ The frequency of delousing will be highest in the weeks prior to when the frequency is constricted to 0,2 in the spring, when the wild smolt migrates from the rivers to the ocean.

How we did it:

We checked all the locations that did delousing over 16 times during the year 2021. We then ended with 16 facilities from different production zones.

We collected data from BarentsWatch, a Norwegian surveillance and information system for the northern sea and coastal areas which we in turn analysed in R-studio.



What we found out:

We found that there are **no correlation** between the amount of delousing and the location of the facilities. Nor did the amount delousing-treatments increase during the spring, when the smolt is migrating, but rather it peaked in the late summer and autumn.

Table 1 shows that seven of the most frequently deloused locations are found in red zones, one in yellow zone and the last eight, are in green zone.

Facility_name	Delousing_count	Production_ID
Skorpo Nv	24	3
Hyseneset	20	4
Krabbholmen	19	6
Blom	19	4
Klungsholmen	19	3
Kattholmen	18	6
Jørstadskjera	18	2
Vadholmen	18	4
Suholmen	17	6
Leite	17	6
Makrellskjæret	17	7
Varden	17	6
Segelråa	17	6
Tepstad	17	4
Djupevika	17	3
Lamøya	17	6

The diagram in figure 2 shows that the delousing frequency is quite low in the spring. However, the frequency is highest during late summer/early autumn. Figure 2 also clearly states that the single week with the most delousing is week number 40.

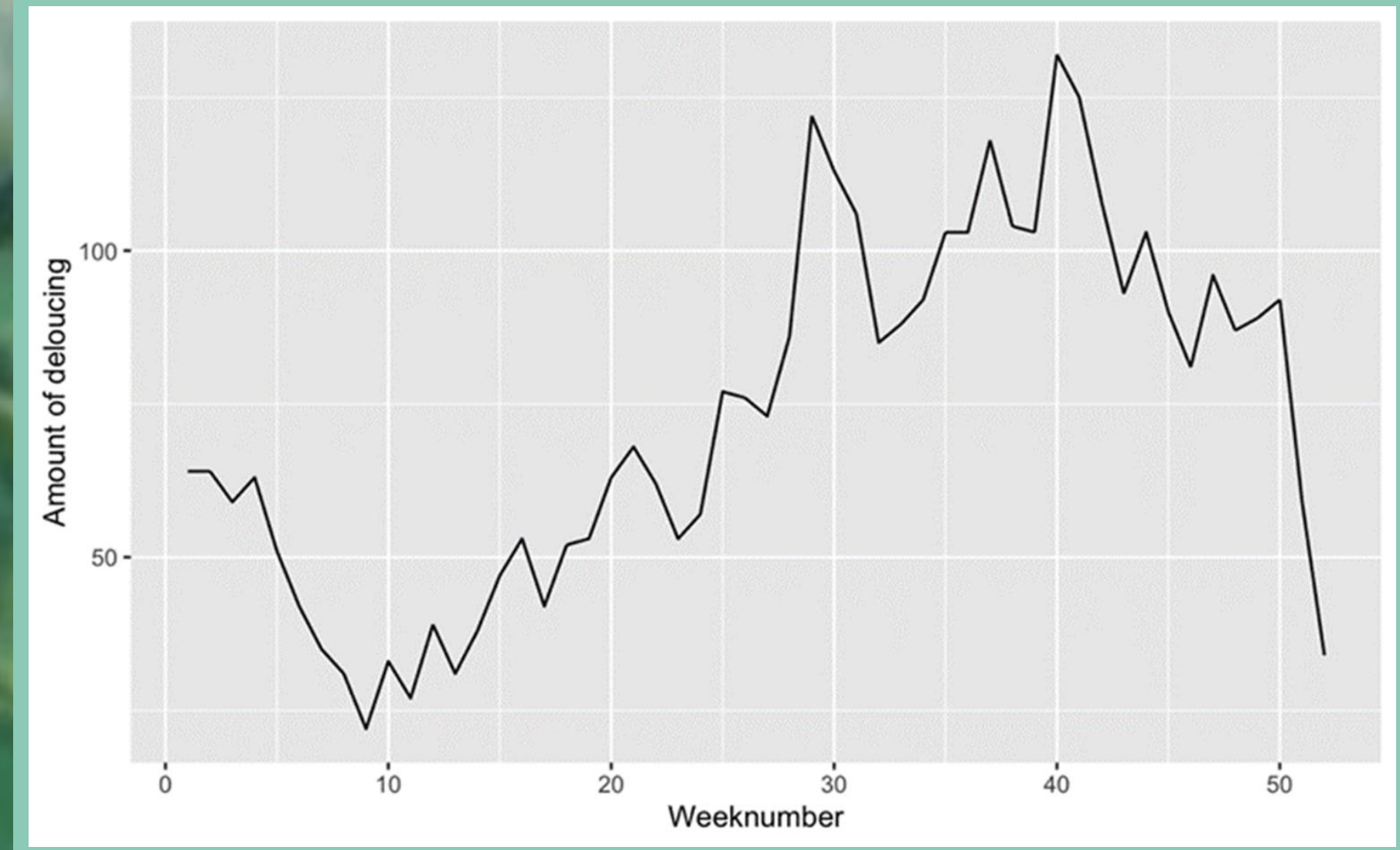


Figure 2: Overview of the amount of delousing per week.

Table 1: overview of the 16 fish locations with more than 16 delousing treatments in 2021.

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