

# Ecological interpretation of legal protection measures

## for fish species exploited by anglers

### *Ekologiczne interpretacje przepisów ochronnych w wędkarstwie*

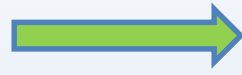


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ANGLING



ECOSYSTEM SERVICES



One of the the many and varied benefits that humans freely gain from the natural environment and from properly-functioning ecosystems.



# PROPERLY-FUNCTIONING ECOSYSTEM

PROPERLY-FUNCTIONING ECOSYSTEM  
WITH STABLE, PERMANENT BIODIVERSITY

The term biodiversity describes the variety of life on our planet or a specific region, measurable as the variety within species, between species, and the variety of ecosystems.

# The most widely introduced measures to prevent overfishing

- Licenced fishing,
- Minimum size limit,
- Fishing season,
- Day's catch limit,
- Fishing method restriction
- Upper size limit,
- „Catch and release” rule.

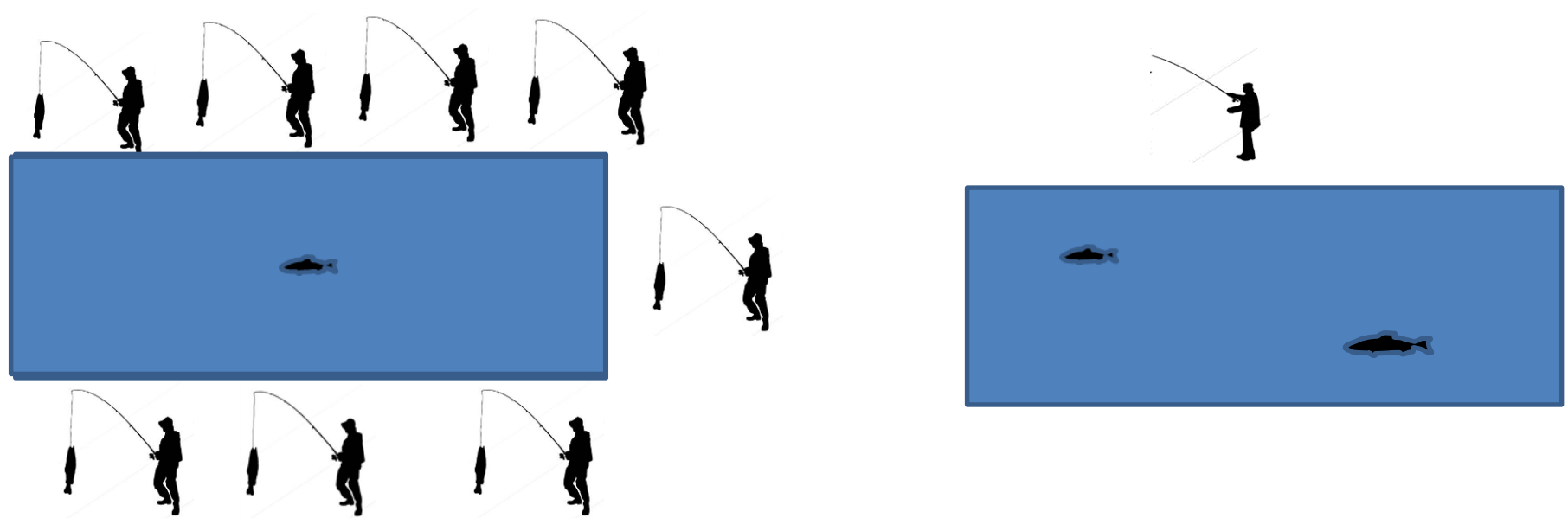


# Licensed fishing

- Decrease the overall exploitation of fish populations,
- Spreading the cost of angling resources management,
- Obligation for anglers to know and respect other rules and fishing restrictions,
- Monitoring of current and actual fishing pressure,
- Continuous improvement of management system.



# Licensed fishing



Consequence of „open access” rule



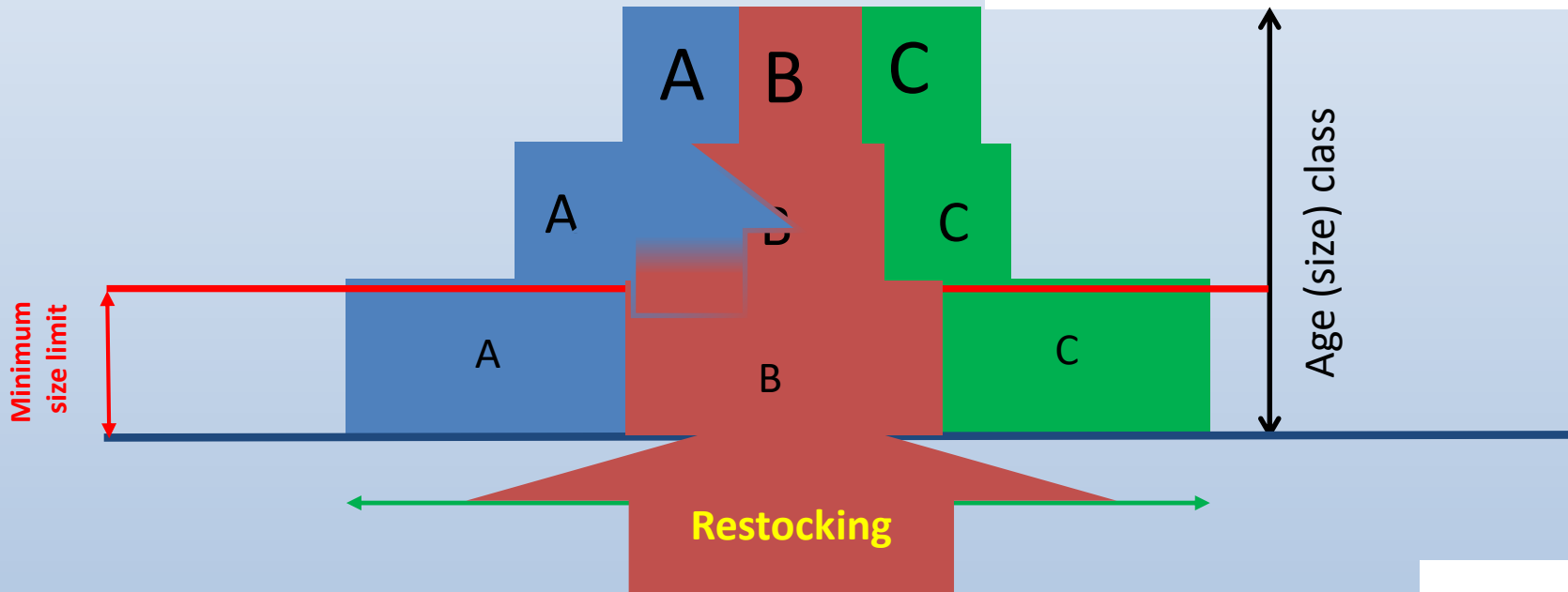
# Minimum size limit

- **Elimination of fishing pressure on individuals not participating in reproduction,**
- **Constant recruitment into exploited part of population.**



# Minimum size limit

- competitive species A
- fished species B
- competitive species C

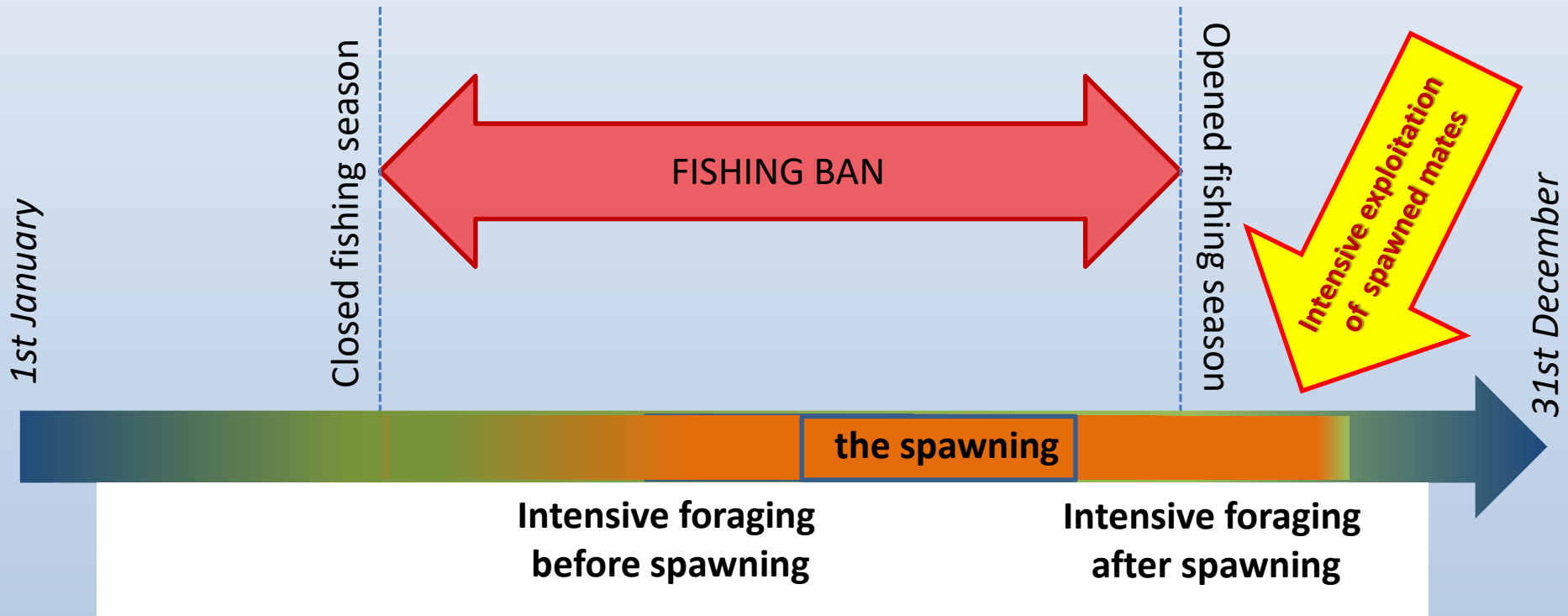




## Fishing season

- to not disturb the natural spawning,
- to protect mated fish,
- to protect spawning grounds,
- elimination of fishing in period of the intensive mates foraging before and after spawning.

# Fishing season



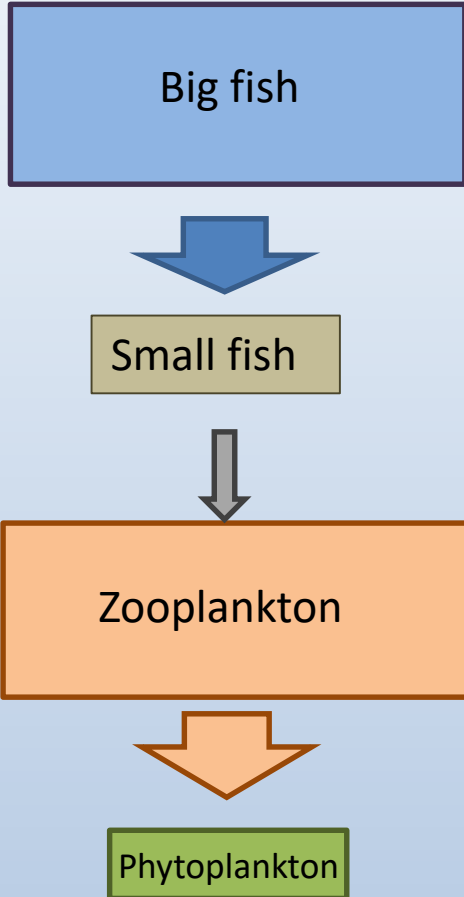
# Upper size limit

- stable probability of expected fishing success,
- domination of best quality ("environmentally verified") spawners,
- stabilization of species diversity.

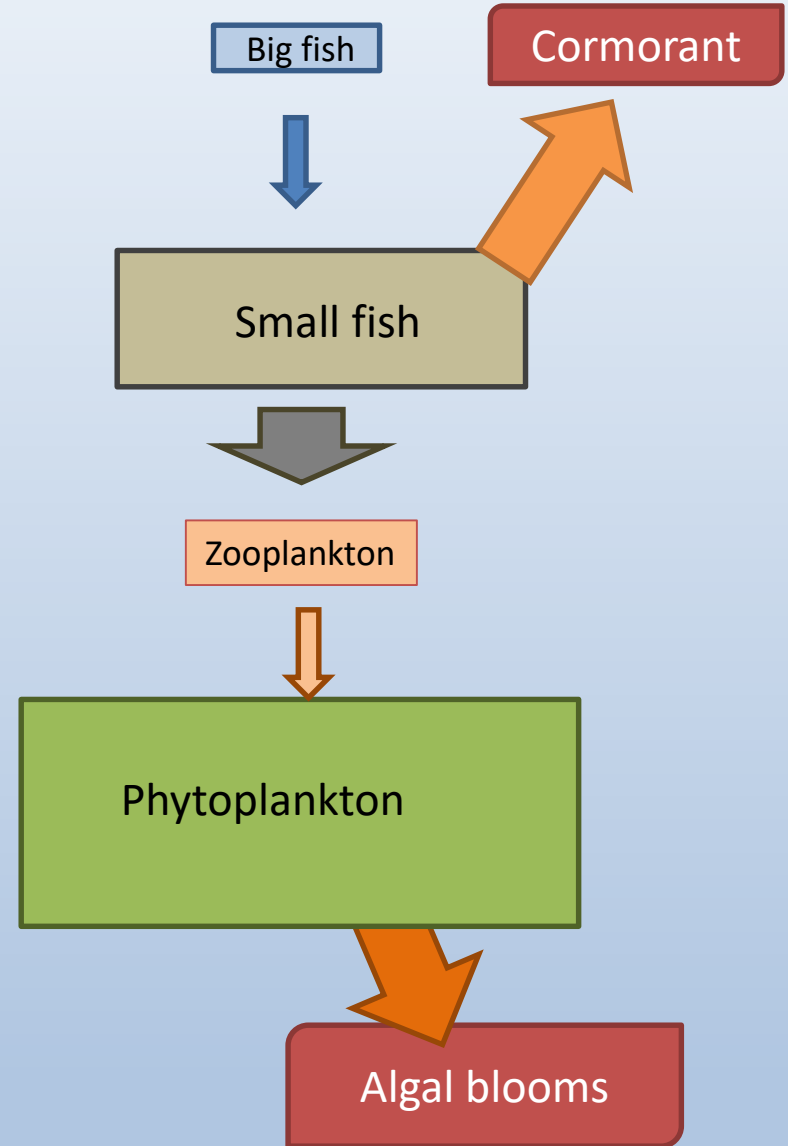


# Upper size limit

Balanced size structure



Violated size structure



# Bigger is Better?

## Young ,small fish

- Low level of accumulation harmful compounds and heavy metals,
- accumulation in non-edible parts of body (eg. guts,kidney, liver),
- better taste and meat quality, easier dosing.

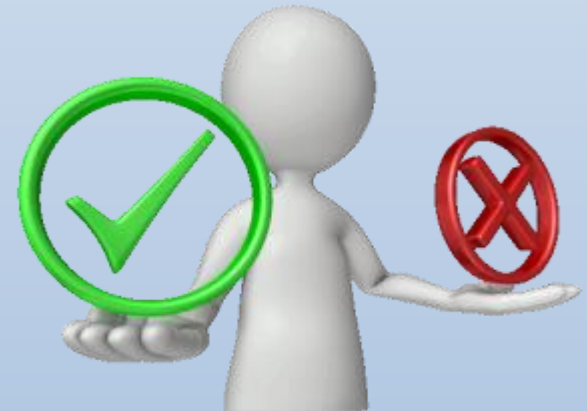
## Old, big fish

- High level of accumulation, the positive correlated to age,
- accumulation mostly in muscles (meat),
- not or less tasty, need more complicated processing and long preservation.



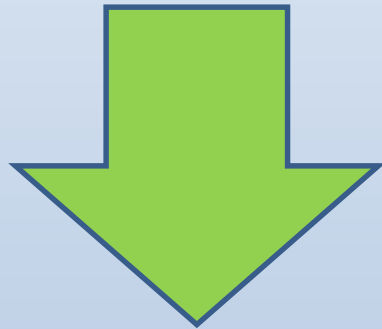
# Day's catch limit

- limitation lethal impact of fishing in period of fish high foraging activity,
- predictability of fishing effort.



# Fishing method restriction

- Limited fishing efficacy,
- Inducing bigger investment in fishing equipment,



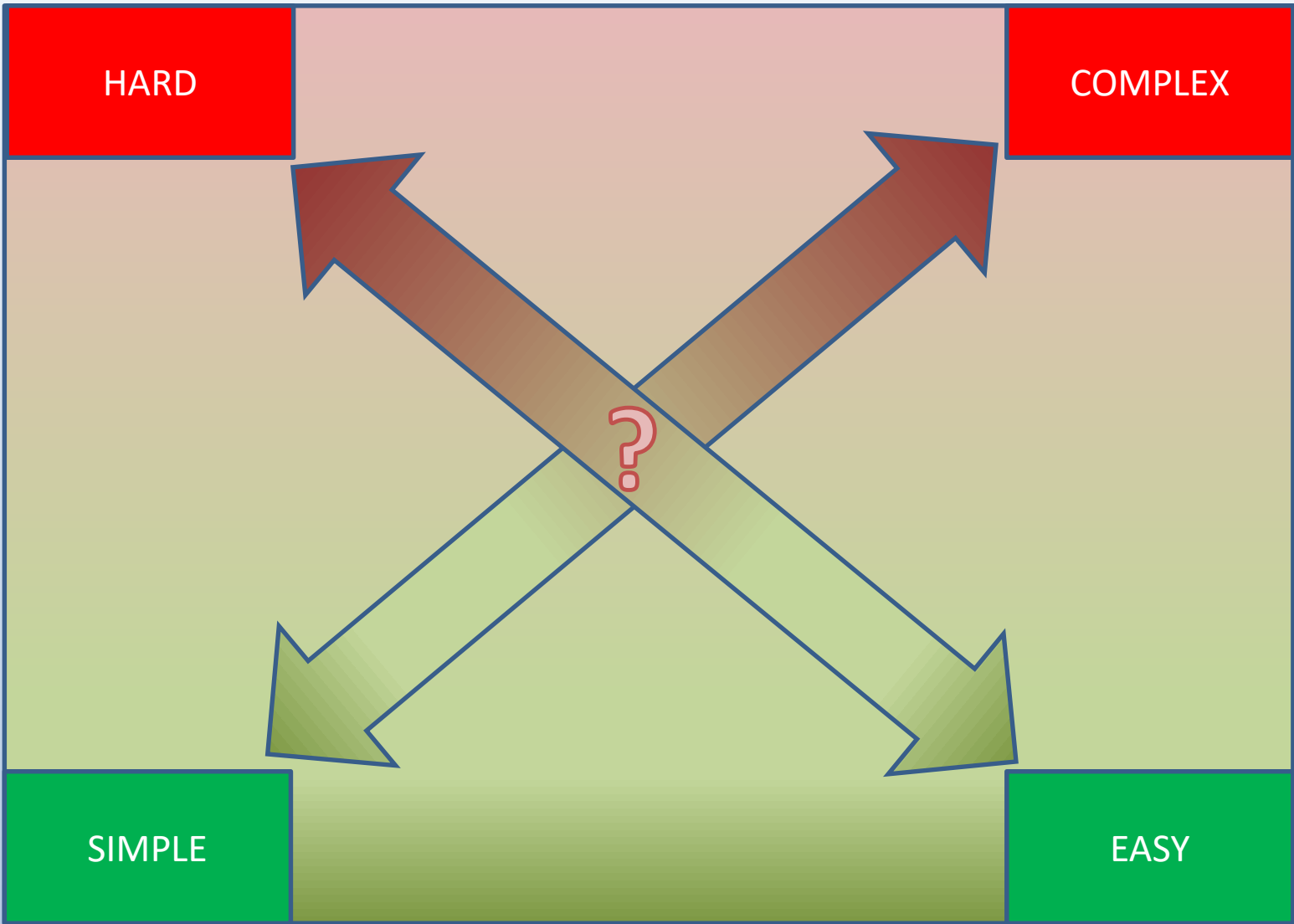
**Growing anglers' engagement in protection of fish resources**



# Catch & release

- Limitation of angling impact on fish populations to the possible minimum





ANGLER  
*PREDATOR*



FISH  
*PREY*

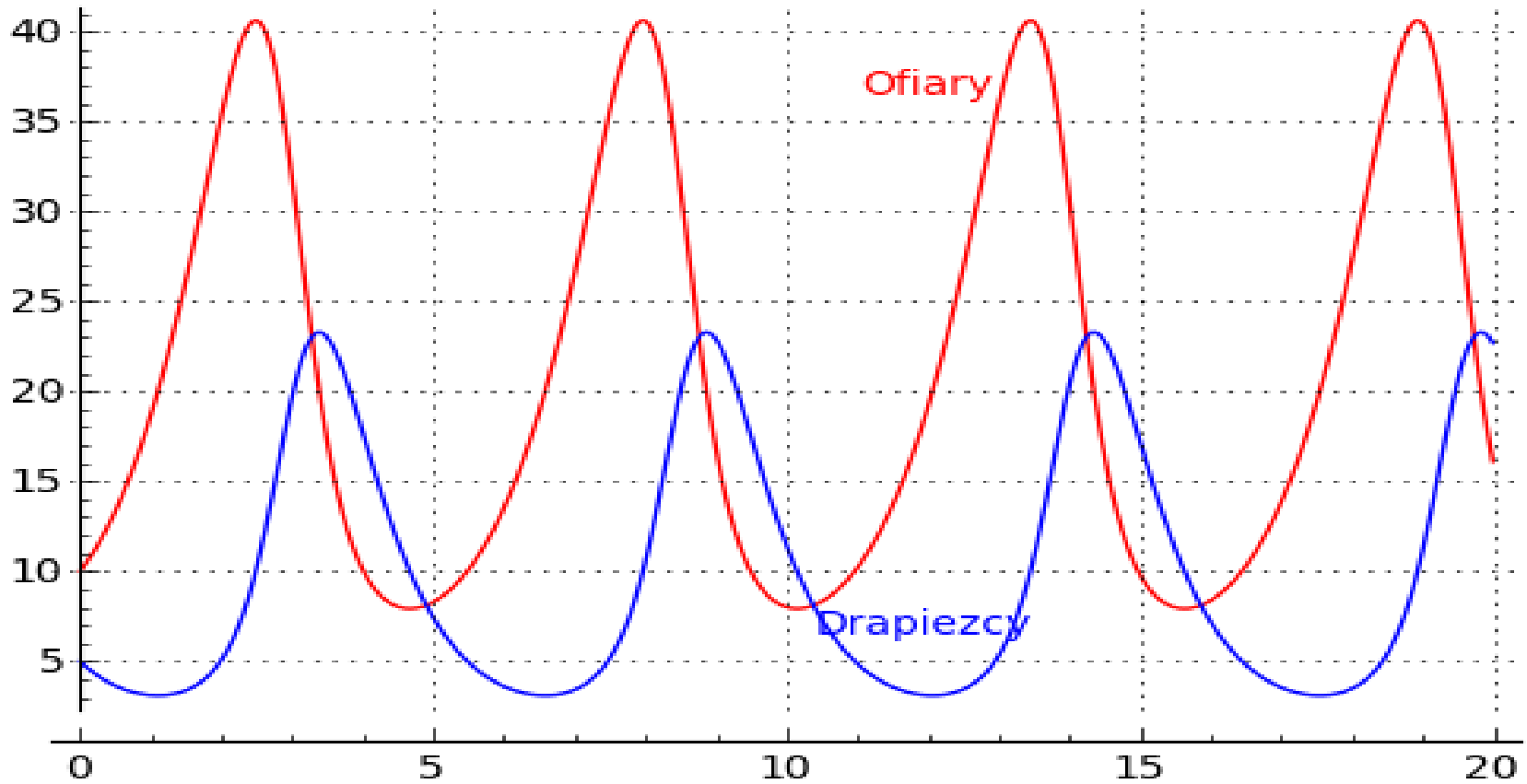


**More predation and competition = Higher biodiversity**



# PREDATOR PREY relationship

populacja



↑  
CHANGES IN NUMBER of individuals  
↓

→  
TIME

# Conclusions

- The efficacy of permanent and universal measures fish resources protection is problematic,
- Legal conservation measures should compose for coherent system flexible in time and space,
- Considering growing efficacy and fishing efforts of anglers prospects of angling touristic are dependent on popularization measures of limitation fish mortality induced by anglers.



Thank you  
for  
your attention

