

Ecological state of lake during restoration measures

“Lake management”

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Poznań and Wągrowiec 30 June -14 July 2013

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Introduction

- The Water Framework Directive (WFD) is a key initiative aimed at improving water quality throughout the EU. It applies to rivers, lakes, groundwater, and coastal waters.
- Lake Durowskie is a very important element of the local community of Wągrowiec
- During previous surveys, conducted since 2009, Lake Durowskie has been shown to be in a poor ecological state due to eutrophication.
- Since 2009, the lake has been the target of a complex restoration programme



Need for Lake Management

- Lake management Working groups aims on assessing the current condition of the Lake Durowskie and suggesting workable solutions for improving the ecological state of the lake.
- It uses results from other working groups of 2013 Summer School as well as questionnaire surveys and proposes preventive/ mitigative measures.

Need for Lake Management

- Lake Durowskie is of interest to many categories of people from Wągrowiec, from fishermen to motor boat enthusiasts.
- With ever increasing recreational use and growing populations residing near and along, lake can suffer from small and large cumulative impacts.

Results of Biological and Physics-Chemical Monitoring (evaluations of lake quality)

Indicators of quality	2011	2012	2013
Physico - Chemical	↓	↑	↓
Macrophytes	↑	↓	↑
Algae (Noth)	↓	↑	↑
Algae (South)	↓	↑	↓
Macroinvertebrates	↑	↑	↓
Fish assemblages	N/A	N/A	↓



Quality degraded



Quality improved



No change

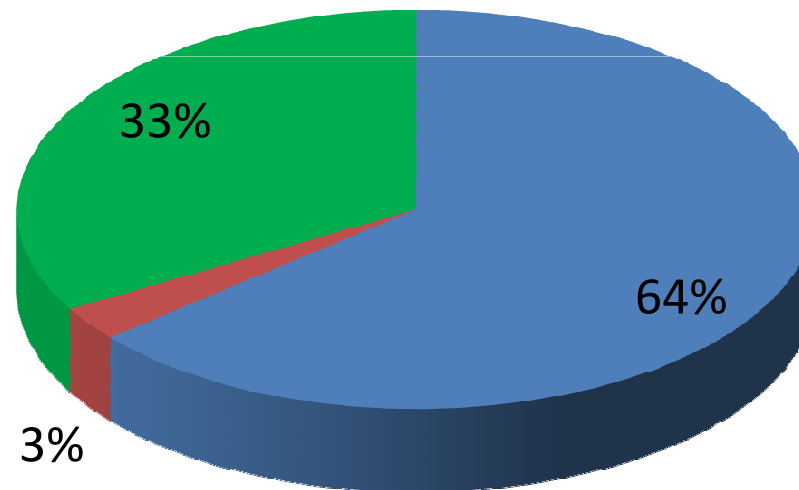
Survey Results



Survey Results (Locals)

What do you think about the reclamation of the Lake?

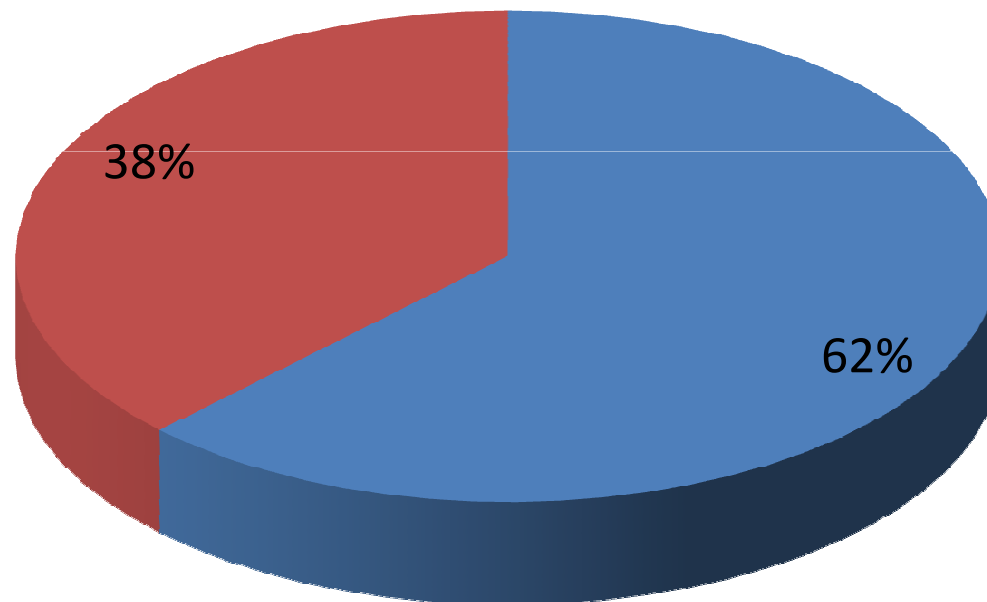
■ Yes its needed ■ No it's not needed ■ Don't know



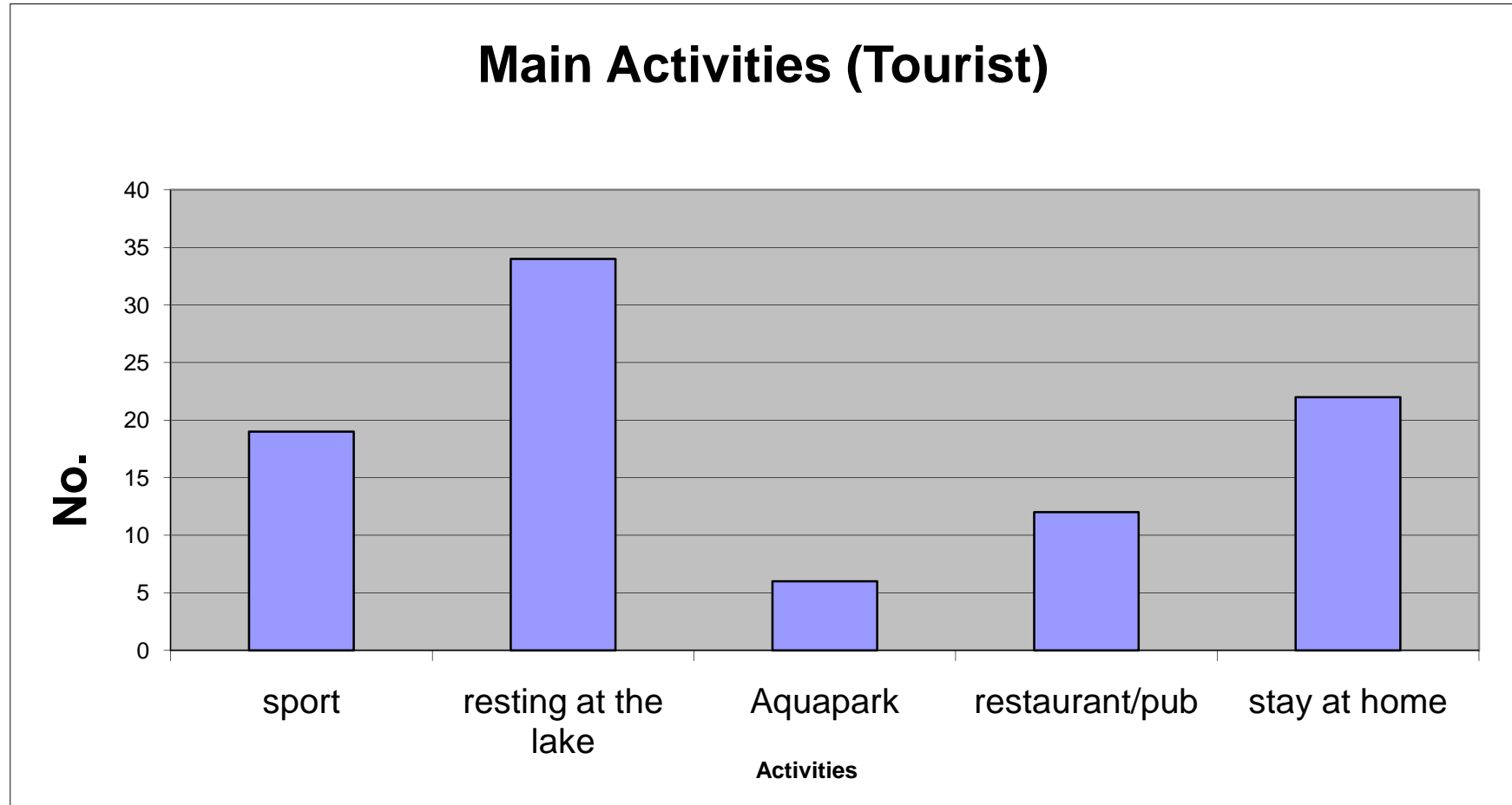
Survey Results (Locals)

Would you be willing to pay money for the reclamation?

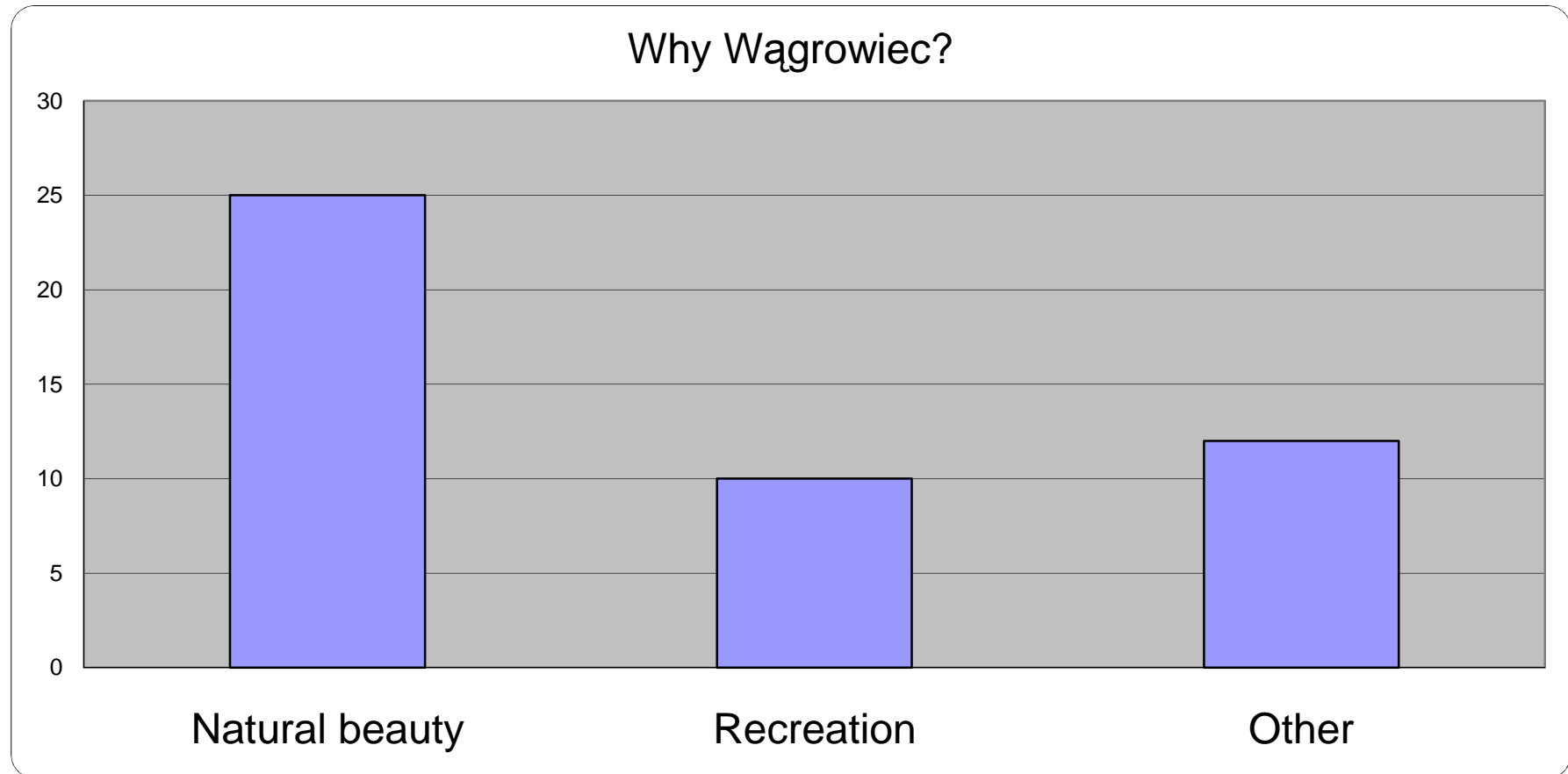
■ yes ■ no



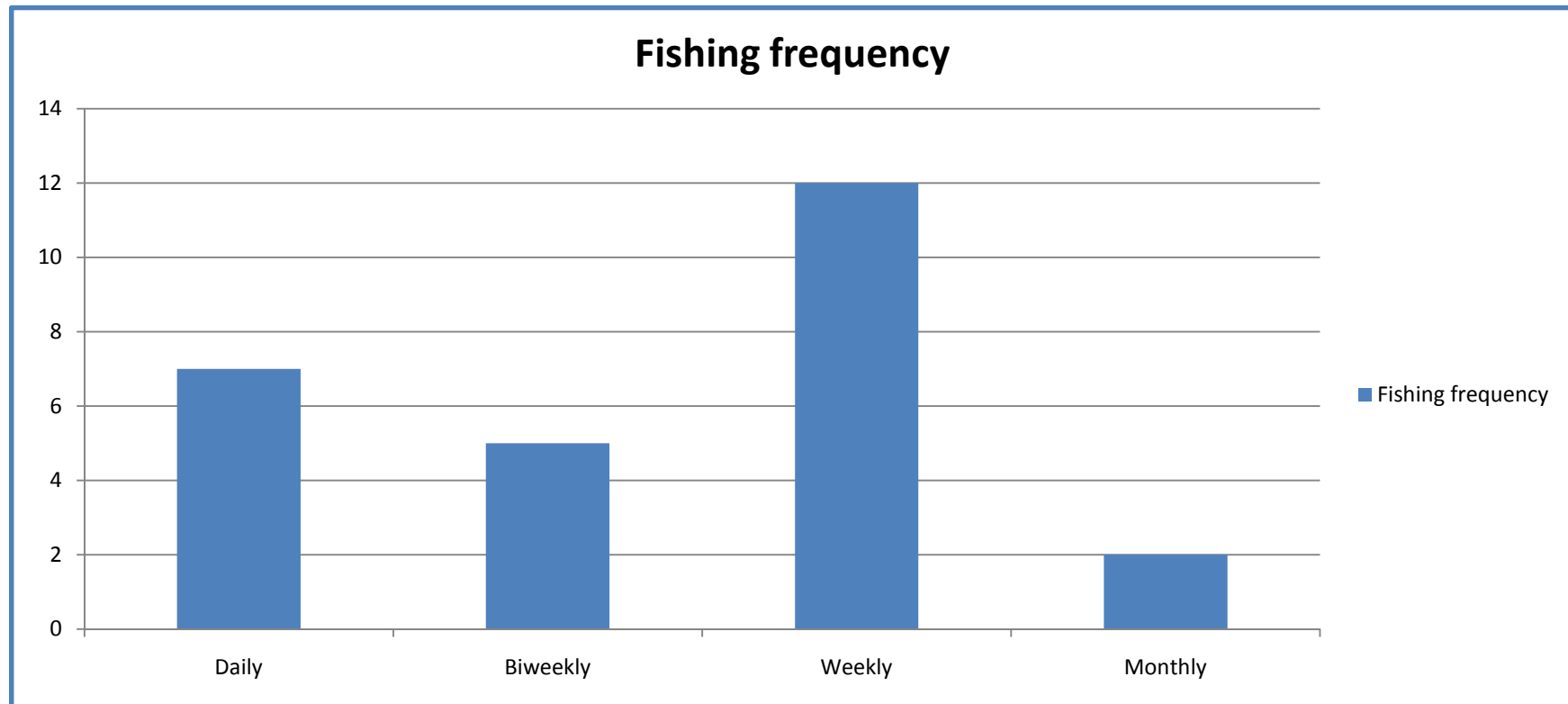
Survey Results (Tourist)



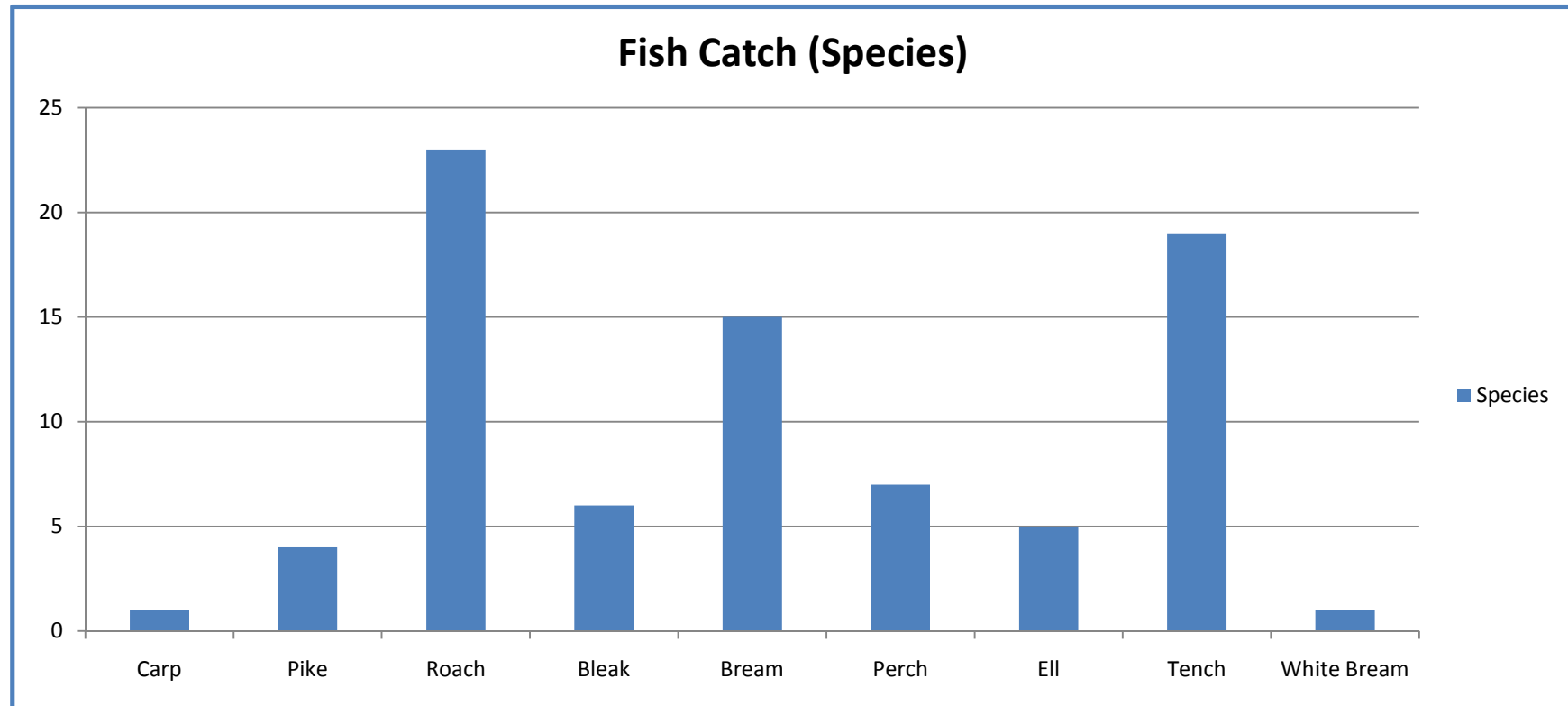
Survey Results (Tourist)



Survey Results (Fishermen)

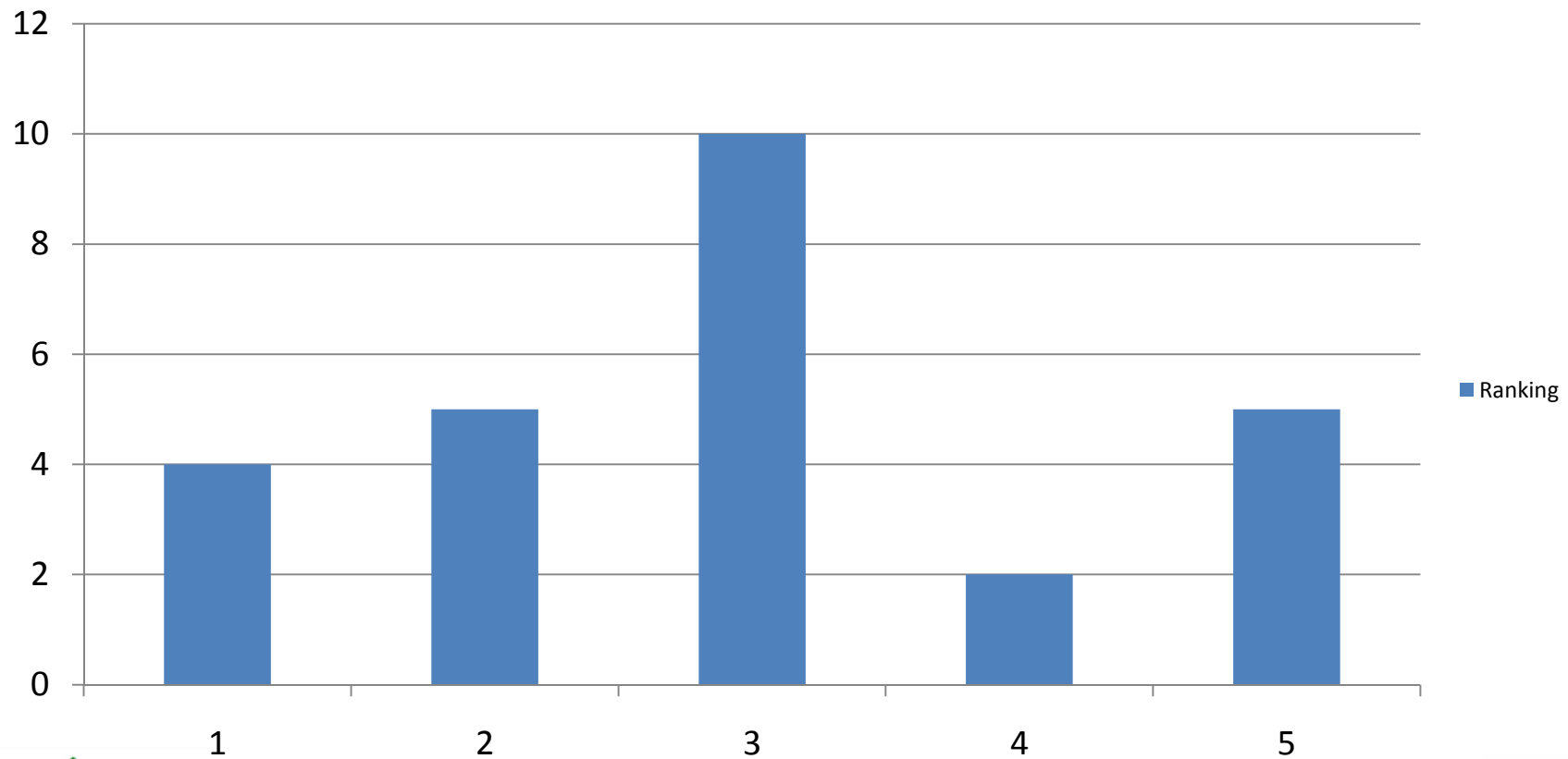


Survey Results (Fishermen)



Survey Results (Fishermen)

How do you rate the water quality for fishing?



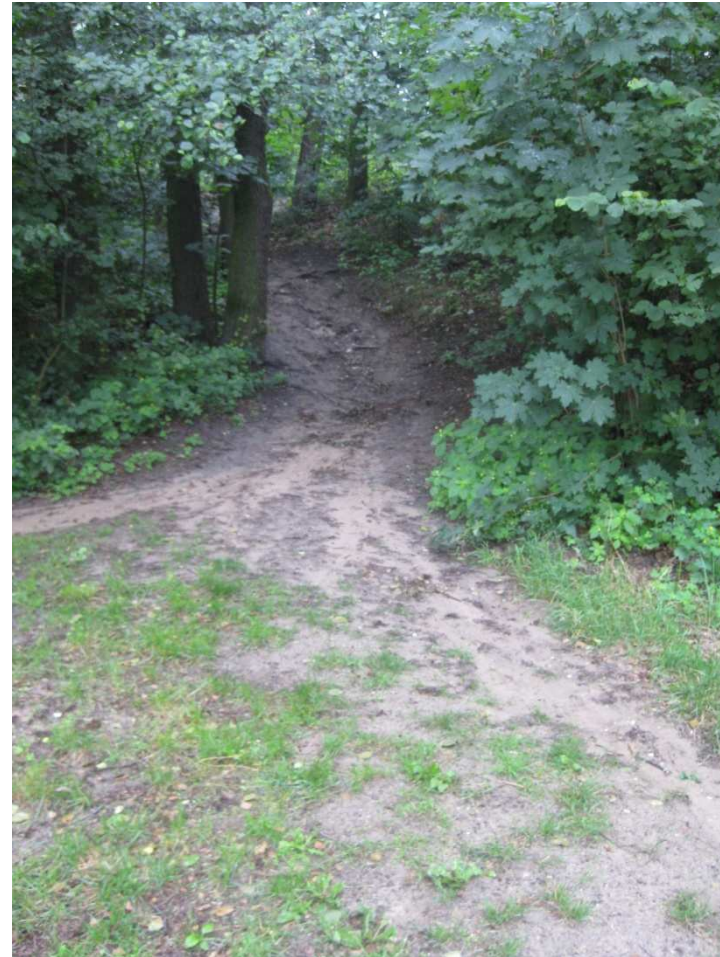
Factors Contributing

External Factors

- Inflow (water containing high nutrients from Lake Kobyleckie)

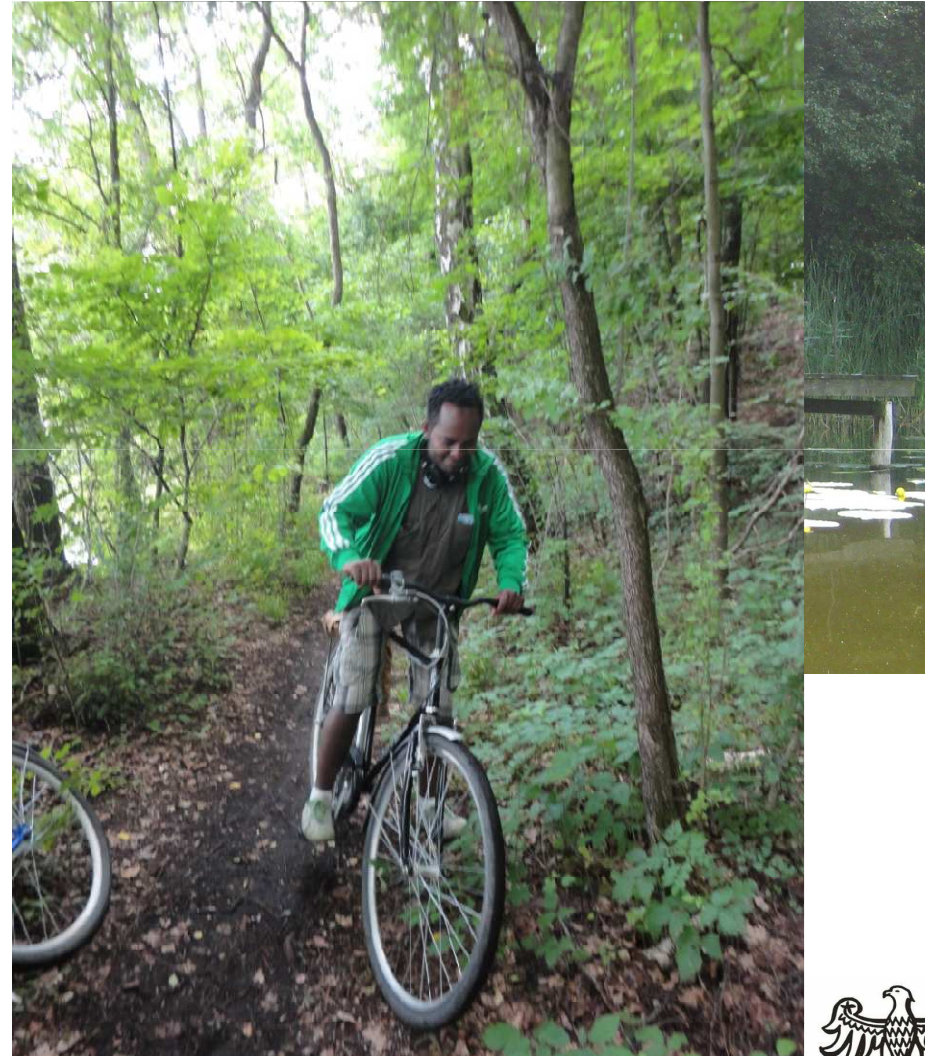
Internal Factors

- Erosion from Surface Runoff
 - Furrow erosion



Factors Contributing

- Fishing
 - By Adding Nutrients (Fishing baits)
 - Jetty's effecting Macrophytes belt along shoreline
 - Direct fishing from lake bank
- Intensified Leisure Activities
 - Strong waves from motor boats effecting Macrophytes belt.
 - Mountain biking along the lake (along with severe rainfall causes mass erosion events).



Conclusion and Recommendations

- Round table capacity building (Public awareness campaign).
- Majority of the locals sustain the rehabilitation of the lake.
- Educate fishermen to reduce use of fishing bait
- Allow more fishermen to use private jetties to reduce impact on macrophytes belts ?
- Zoning of lake in North and South (Limit activities in the North of Lake)

Conclusion and Recommendations

- Change route of biking along the lake to limit erosion events.
- Construct jetties to reduce foot print on macrophytes belt.
- Ban use of motor boat in certain areas ?
- Motor boat rides to be limited to reduce effect on macrophytes

Thank you!

Danke!



Dziękuję

Multumim!