Glossary

Acidification: decrease in the buffer capacity, causing the pH to decrease.

Additional scope: The additional scope shows the conditions whereby the habitat type cannot be permanently maintained in a well-developed state, but which do deliver a valuable addition, because for the habitat type less characteristic vegetation may occur here. In exceptional cases the additional scope may be the best achievable (Runhaar et al. 2009).

Aerosol: An aerosol is a mixture of dust particles or liquid droplets suspended in a gas (mist, smoke). Examples of small solid particles are $(NH_4)_2SO_4$ or NH_4NO_3, which are formed by the reaction of ammonia (NH_3) with acids, forming ammonium salts. The conversion into aerosols is, inter alia, of importance for the distance over which the concerned substances are transported. Under the influence of air currents, the various gases and aerosols can travel long distances in the atmosphere.

Aluminium Buffer Range: In lime-free, acid soils (pH < 4.5) the weathering of the aluminium hydroxide present in the soil is the buffer mechanism. When this reaction is put in motion, more and more Al_3^+ becomes available in the soil solution, while previously Al was virtually only available in the soil in non-dissolved form. Like H^+ Al_3^+ can also be bound to the soil complex, but this process can not prevent the increase in free Al_3^+. It is important to know that (dissolved) Al_3^+ is toxic to many plant and animal species. If there is a lot of Al_3^+ in the soil moisture, it means that the buffer capacity of the soil is already consumed to a large extent. Amorphous iron oxides are solved by acid buffering reactions in the presence of dissolved organic matter by a pH <3.8.

Ammonia: NH_3

Ammonium: NH_4^+

ANC: Acid-neutralizing capacity.

Anions: An anion is an atom or several atoms, which have a negative electrical charge due to a surplus of one or more electrons.

Base saturation (BS: Base Saturation): the percentage of cations (Ca_2^+, Mg_2^+, K^+, Na^+) of the cations exchange capacity.

Beach Nourishment: Artificial replenishment of the beach or the foreshore of the North Sea coast with sand (taken elsewhere in the North Sea).

Buffer capacity: The buffer capacity is the amount of strong acid or strong base that must be added to 1 litre of buffer in order to change the pH of the buffer mixture by one unit. The buffer capacity therefore tells us about how 'well' a buffer works.

Cations: A cation is an atom or several atoms that have a positive electrical charge due to the lack of one or more electrons.

Cation Exchange Capacity (CEC): the capacity of the soil to exchange positively charged ions with the soil solution.

Characteristic species: The profile document contains a table of characteristic species for each habitat (sub) type. This set of characteristic species as a whole is used (in accordance with the system of the European Commission) to assess the conservation status (quality) at a national level. A number of different characteristic species is distinguished: exclusive (E) and characteristic (K) species (species whose ecological requirements only, or mainly, occur in the habitat type concerned) and constant species (C) (species which occur in each area with the habitat type concerned, but are not restricted to that habitat type. Ca-species indicate good abiotic conditions, Cb-species indicate a good biotic structure.

Conservation objective: For each Natura 2000 site, the designation states which natural values should be conserved. In areas designated under the Birds Directive these are bird species. The conservation objective then indicates by species for how many birds the area should be *(conservation target)* or should become *(development goal: increase the surface and / or improve the quality of the area)* a good habitat.
In areas designated under the Habitats Directive it involves habitats or species. The conservation objective indicates how much habitat should remain (conservation target) or should be developed (development objective) and whether its quality should be maintained or improved.

Core Range: Range whereby the well-developed components of the habitat type can occur. In order to meet the conservation objective, the largest possible part of the core range must be realised within the area (Runhaar et al. 2009).

Critical Deposition Value (CDV): The critical deposition value for nitrogen is defined as "the limit, beyond which the risk can not be excluded that the quality of the habitat type is significantly affected as a result of the acidifying and / or fertilizing influence of the atmospheric nitrogen deposition" (Van Dobben & from Hinsberg 2008). The critical deposition values, which are taken as a starting point in the recovery strategies, are specific to habitat types in the Netherlands (as established in Van Dobben & Van Hinsberg (2008). In that (internationally positively assessed) report several sources of knowledge regarding critical deposition values are combined using a fixed protocol (Van Dobben & Van Hinsberg 2008).

Denitrification: The process by which bacteria convert nitrate into nitrogen. These bacteria use nitrate as an electron acceptor when little or no oxygen is present. This releases energy for their metabolism.

Deposition rate: The rate at which ammonia is removed from the atmosphere by inclusion in the vegetation and soil.

***Duinrel*:** A shallow dug watercourse where seepage water can flow from the dunes into the lower area (often a polder).

Dynamics: Variability, influence of external factors on an ecosystem.

Ectomycorrhiza: Type of fungi covering the root tips of higher plants. The fungal hyphae penetrate the cells to take up the products of photosynthesis.

Effect-oriented measure: Construction and management measure against the effects of atmospheric nitrogen deposition, and for increasing the size and quality of specific nature.

Eutrophication: An increase in the availability of nitrogen in soil or water, and thus an increased uptake of nitrogen compounds by the vegetation. Due to an increased supply and accumulation (retention) of N compounds the availability of nitrogen will gradually increase.

Habitat: The location where a particular species and / or vegetation occurs, because the abiotic and biotic factors on that location meet the requirements and tolerances that allows the organism to survive, grow and reproduce.

Habitat type: A habitat, as defined in Natura 2000 (for the precise definition of a specific habitat type, see the profile documents).

H-layer: An organic layer (zone) consisting of an accumulation of organic material at the surface, which is saturated with water over a longer period (unless there is artificial drainage).

Infiltration: Downward movement of groundwater.

Leaf Area Index (LAI): Total leaf area of the vegetation per unit of soil surface.

Legumes: Plants belonging to the legume family (Fabaceae or Leguminosae). Most species of this family live in symbiosis with nitrogen-fixing bacteria (*Rhizobium sp.*).

Mineralisation: The transition of organic matter into inorganic substances (such as nitrate and ammonium).

Moder-humus: Form of humus without the intensive mixing of organic and mineral material and with many small droppings of soil fauna, typical of sandy soils.

Mull-humus: A mechanically inseparable mixture of organic matter and clay, typical of chemically richer soils.

Natura 2000: European network of valuable habitats and also the name of the European policy to protect the nature in those areas.

Nitrate: NO_3^-.

Nitrification: The biological oxidation from ammonium to nitrite by bacteria, followed by the oxidation of this nitrite to nitrate.

Nitrogen deposition: The precipitation of nitrogen (from the air).

Nitrogen emission: The discharge of nitrogen (into the air).

Nitrogen oxides: A collective name (sometimes abbreviated as NO_x) for the binary compounds of oxygen and nitrogen (NO, NO_2, N_2O, N_2O_3, N_2O_4, N_2O_5, NO_3).

Nitrophile: Nitrogen-loving.

Occult deposition: The deposition of cloud or fog drops directly on the vegetation or soil (cloud or fog deposition).

Oxidation: A chemical process in which a substance (the reducer) emits electrons to another substance (the oxidizer).

Parabolic Dune: A sand ridge or dune in an elongated crescent shape, consisting of well-sorted sand. This type of dune possesses two "horns" that lie in the leeward direction. Also called a barchan dune.

Podzol: Soil type with a top layer of humus-rich soil, a pale gray (leaching) layer underneath, followed by a dark (illuvation) layer and the original soil on the very bottom layer.

Podzolisation: The process of podzol formation, occurring in loam-poor sand under the influence of a precipitation surplus.

Profile document: The definition and demarcation of habitat types is defined in the so-called Natura 2000 profile documents that have been drafted for all habitat types, habitat species and bird species. The profiles include the following elements: characterization (description, relative importance), ecological requirements, quality (characteristic types and characteristics of good structure & function), current presence, assessment of the national state of conservation, sources. The Natura 2000 profile document is a background document of the Ministry of Economic Affairs.

Pyrite: Mineral with the formula FeS_2 (chemical name: iron disulfide). This mineral is an important iron and sulphur ore.

Recovery strategy: A series of effect-oriented measures that are (or could be) effective for a specific habitat.

Redox potential: The potential difference which is created by a redox reaction between the reducing agent, the electron donor and the oxidising agent; redox potentials arise between ions of the same metal but with different loads, as well as between metals and solutions of their ions.

Reduction: A chemical process in which a substance (the oxidizer) receives electrons from another substance (the reducer).

Seepage: Upward movement of groundwater.

Silicate minerals: An important group of minerals composed of SiO4 tetrahedra. They constitute almost 95% of the earth's crust and exist in numerous varieties.

Soil adsorption complex: Clay minerals and / or organic components, which are negatively charged on the outside, whereby cations (Ca_2^+, Mg_2^+, K^+, Na^+) are weakly adsorbed to this complex. When additional H^+ comes into the soil, the hydrogen ions may suppress the cations of the complex, whereby these cations end up in the soil solution. The hydrogen ions themselves are then adsorbed in the complex, and no longer in solution, so that the pH does not change.

Source-based measure: Any measure aimed at reducing atmospheric nitrogen deposition, by reducing emissions (emissions of nitrogen).

Subtype: In some cases the habitat type is divided into so-called subtypes, because the habitat type includes a large ecological variation of ecosystems: different subtypes with a significantly different species composition and / or structure and function and / or differences regarding the abiotic preconditions. These differences are described in separate tables for the vegetation, characteristic species and abiotic preconditions.

Succession: The gradual transition from one vegetation type to another. This can be a natural process, but is often accelerated by human intervention.

Sulphate reduction: Under anaerobic conditions, sulphate is reduced to hydrogen sulphide (H_2S) by sulphate-reducing bacteria. This can escape to the atmosphere or turn to sulphide (S^{2-}), which can dissolve in the soil moisture. The reduction of sulphate produces a net buffering capacity: in addition to sulphide, (bi) carbonate is generated as well. The increase in buffer capacity is hereby generated by the system, like in the case of denitrification, and is therefore also called an internal alkalinisation. In sulphate reduction organic material is also decomposed. Thus a net alkalinity is generated creating a positive feedback effect on the decomposition and where in addition to phosphate ammonium can also be released into the soil moisture.

Toxicity: Poisonousness.

Transverse dunes: Long, straight stretch of dunes, the longitudinal direction of which being perpendicular to the prevailing wind.